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THE PHAMACOPŒIA OF 1870—SHALL ITS AUTHORITY BE MORE GENERALLY RESPECTED?

By William Procter, Jr.

In May, 1870, the next decennial convention of delegates from the incorporated medical and pharmaceutical bodies of the United States, meets in Washington for the purpose of taking the usual measures to effect the fifth revision of the Pharmacopœia. It is of great importance to both physicians and pharmaceutists that this revision should be wisely considered and thoroughly executed, so that the pharmacopœia may command the respect and recognition in practice so necessary to its usefulness. In the absence of any legal power to compel the adoption of its formulæ, it is worthy of the earnest consideration of the medical profession and of all well informed pharmaceutists to devise some plan by which a more general recognition of its authority may be effected. Forty years ago, before the edition of 1830 was published, apothecaries, even in Philadelphia, used their private manuscript "receipt books" for most of the leading preparations. Now the pharmacopœia or its commentary, the U. S. Dispensatory, is found in every shop. Nevertheless there is a disposition on the part of many to depart from officinal rules, when to obey them is more troublesome or more expensive than some short cut process that they may have devised. This deviation in reference to chemicals of a positive composition, as calomel or tartar-emetic, for instance, is less objectionable,

because the result is the same; but in what are called the galenical preparations, as extracts, fluid extracts, tinctures, syrups, etc., this deviation often so alters the appearance and composition of the results as to cause doubt and distrust on the part of well informed physicians.

The *first step* toward a reform in this matter is to make the Pharmacopœia of 1870 as nearly perfect as it is possible. Let its formulæ—especially those most certain to be used by the dispensing pharmaceutist—be marked for the simplicity and directness of their manipulation, and for the excellence and attractive appearance of their results, when these qualities are not incompatible, always giving the preference to intrinsic rather than apparent value.

The *second step* must be taken by physicians in their society capacity chiefly. The American Medical Association is the medical body best able to exert a universal influence within our national boundaries in promoting the practical recognition of the United States Pharmacopœia. That Association meets the same week in the same city with the pharmacopœial convention, and now united, north and south, will be in the best condition to exert a lasting influence on the future standing of the pharmacopœia, by lending its entire influence in favor of officinal preparations made by officinal formulæ. This may be done, *first*, by declaring its convictions in a few well drawn resolutions directed to its members, and *secondly*, by urging forcibly on the attention of each of the subordinate state and county medical societies to examine the new edition when published, through a competent committee, recommending their members to become acquainted with its officinal names and new preparations, and to refuse to prescribe A. B. & C.'s preparations, which profess to be better, until the officinal have been found wanting.

It is often said that medical men are easily persuaded into using medical novelties—that advertising is the true secret of getting up the reputation of medicines among the physicians. This idea is so well known to manufacturers that instances occur of their publishing journals at nominal prices in order to advertise their products. It therefore appears to be true, however

humiliating it may be to the medical profession, that many of its members are "lead by the nose" through the agency of quick-witted advertisers on the covers of medical journals, and in circulars and pamphlets. The remedy for this evil is better professional education—better acquaintance with the materia medica—better knowledge of the preparations of the pharmacopœia by actual inspection, so as to be able to tell, as far as sensible properties permit, what their patients are getting. We don't believe the possession and exercise of this knowledge on the part of physicians will unfavorably influence legitimate pharmacy, but will increase the demand for regular preparations at the expense of the many fancy novelties now flooding the shops.

The *third step*, and perhaps that on which most depends, must be taken by the pharmaceutists. Their organization is by no means so complete as is that of physicians; nevertheless the American Pharmaceutical Association, in co-operation with the Colleges of Pharmacy, may do much to uphold the pharmacopœia as the law in making officinal preparations; and it is to these institutions that the revisional Committee of the National Convention should look for the most efficient aid in their work. It is complained sometimes that the pharmacopœia does not embrace preparations suited to certain localities. If this be true—if the pharmaceutists of New Orleans, Mobile and San Francisco find that their wants are not well represented in that work, now is the time to make suggestions through the journals or in communications to the Associations or directly to the Revisory Committee when appointed. On the other hand, in our northern cities, the German element largely enters; German pharmacy is much practised, and the preparations of the Prussian pharmacopœia are extensively prescribed. These German stores are often kept by men of intelligence and education, who keep the preparations of both pharmacopœias, but in reference to extracts, syrups, and tinctures, it is quite possible that they are often confounded in dispensing prescriptions, and that some influence exerted in that direction might be useful. It is also quite possible that valuable preparations, peculiar to German pharmacy, might be engrafted upon ours in view of the extensive demand from German physicians.

THE TRUMPET-PLANT IN DIARRHŒA.

By J. Dabney Palmer.

A yellow-flowered specimen of this plant—known as the *Fly-catcher*, *Huntsman's-cup*, *&c.*—was brought to my notice last year for the purpose of ascertaining its therapeutic effects. I prepared a tincture of the root according to the following formula, of which I found one teaspoonful a sufficient dose:

℞. Trumpet root, . . . four ounces.
Diluted alcohol, . . . two pints.

Macerate fourteen days, express and filter.

The experiments from that time to the present have been confined to cases of diarrhœa, and with such gratifying results as to justify me in recommending it to the profession. Some of the cases were of long standing and very obstinate; others were recent and yielded immediately. In none, however, were more than four ounces of the tincture necessary to effect a cure. A few doses were generally sufficient. My method of giving it is one teaspoonful after each evacuation.*

Monticello, Florida.

CARBOLIC GLYCERIN AND PLASTER.

Louisville, Feb. 23d, 1869.

William Procter, Jr., Philadelphia.

My dear Sir,—I take the liberty of dropping you an additional line *apropos* of glycerin as an excipient.

During our sojourn in Europe in 1867, you may remember Dr. Lister, of Glasgow, was experimenting with carbolic acid, with a view to its use as a surgical dressing. He found that one of the most convenient and efficient modes of applying this agent was to incorporate it with glaziers' putty. This was a good idea, for the putty is plastic, handy, cheap, not uncleanly, and adapts itself well to any irregular surface. This close contact is advantageous in two ways—it brings the medicament in intimate con-

* We do not know what plant the author means, as several are so called. *Bignonia radicum* is called trumpet flower, and *Eupatorium purpureum* sometimes called trumpet weed. If the author will advise us, we will state in our next.—Ed. Am. J. Ph.

nection with the parts to be healed, and it serves the important purpose of excluding the atmospheric air, with its myriads of germs of organisms, thus preventing the action, whatever it may be, of this supposed prolific source of trouble—spores floating in the air—upon sores and exposed denuded surfaces, to say nothing of the influence of atmospheric oxygen upon parts of low vitality, and struggling to resist surrounding destructive agents and processes, (its "levelling" propensity?)

This putty, however, is not the best vehicle for the purpose intended, for it dries pretty rapidly and "sets;" it becomes rigid and finally hard, thus getting into a condition calculated to do much harm and occasion great discomfort. Having been applied to to overcome this difficulty, glycerin instantly suggested itself to me, and I proposed to make a putty with this valuable body instead of linseed oil. The experience of a year and more has established the great value of the improvement. The formula I framed gives a preparation possessing the proper consistence, and one which maintains its properties unimpaired, when kept in closed jars, for a long time.

I. *Carbolic Glycerin.* (T. E. J.)

℞. Carbolic Acid, . . . 1 part.
Glycerin, ... 4 parts.
Mix.

II. *Carbolic Plaster.* (T. E. J.)

℞. Carbolic Glycerin, . . 34 pts., by weight.
Prepared Chalk, . . . 94 pts.

Mix well by kneading, and enclose in closely stopped jars.

This preparation will, I think, be found to be all that is desired.*

Yours, very truly,

THOMAS E. JENKINS.

* NOTE.—An apology is due to Dr. Jenkins for the omission of this paper in our May number; the communication was received too late for the March number, and on laying aside for the next was accidentally overlooked.—ED. AM. J. PH.

ON BICARBONATE OF AMMONIA AS A PHARMACEUTICAL PREPARATION.

By William Procter, Jr.

The writer for many years past has used this salt as an antacid in place of bicarbonate of soda, and now brings it forward as deserving the attention of physicians in certain gastric affections wherein its antacid and substimulating powers may be indicated, in connection with bitter tonics, aperients and aromatics.

It is well known to druggists that considerable quantities of this salt are formed on the sides of casks in which carbonate of ammonia is imported; and other portions are derived from the accidental or careless exposure of the sesqui-carbonate, whereby an equivalent of mono-carbonate is lost. Even in the shop bottles of dispensers this is constantly going on to a limited extent. It has been usual to reserve the salt thus obtained for forming acetate, nitrate, or other ammoniacal salts, but it has rarely been used medicinally on its own merit. If it were sufficiently abundant, or could be prepared cheaply by a direct process, it would form, by all odds, the best yeast powder that can be offered, as it contains a larger portion of carbonic acid than any of the alkaline bicarbonates, except that of lithia, which of course is unsuited to this use, but it is too scarce for that use now. Bicarbonate of ammonia in its purest state is a white salt, isomorphous with bicarbonate of potassa, and possesses the same crystalline form. Its composition is $NH_4,O+2CO_2$, HO. Its taste is saline with a slightly ammoniacal impression, and is slowly volatile when exposed, and gradually evaporates with a slight odor of ammonia. It is soluble in 8 parts of water at 60°F, and its aqueous solution has an alkaline reaction with syrup of violets, (Liebig.) It is decomposed by the heat of boiling water, giving off carbonic acid; on this property its merit as an yeast powder partially depends. It is nearly insoluble in officinal alcohol, but soluble in parts of diluted alcohol. It is most easily prepared in a small way by dissolving out the mono-carbonate from the powdered sublimed sesqui-carbonate (which consists of one equivalent of each salt) by aid of alcohol (U. S. P. 85 per cent.) in which the bicarbonate is but slightly soluble. The residue

may then, after due washing with alcohol, be dried and used in the pulverulent form. When alcohol is added in excess to a solution of the medicinal carbonate the bicarbonate precipitates in a crystalline form.

When a saturated solution of sesqui-carbonate of ammonia in water is saturated with CO_2, a quantity of the bi-carbonate separates in crystals, owing to its less solubility.

The translucent lumps of sesqui-carbonate of ammonia when exposed lose much weight, and the residue is almost entirely bi-carbonate. This is the form in which it is most usually met with, and it may be obtained from that salt at any time, but it is too expensive, 100 parts of the officinal carbonate yielding only about 50 parts of the bicarbonate instead of 59, the theoretical yield. The relative proportions of the potash soda and ammonia salts to saturate one equivalent of SO_3 are 100, 84 and 70, so that ten parts of bicarbonate ammonia nearly equal 14¼ parts of the potash and 12 of the soda salt.

THE PROPER STRENGTH OF FLUID EXTRACTS.

By William Procter, Jr.

The idea of fluid extracts being grain to minim in proportion is a beautiful one, enabling all to remember their medicinal strength. The only officinal departures from this ratio are those of wild cherry and cinchona. The former, owing to the peculiar character of the process, cannot be made more concentrated with a certainty of exhausting the material. The latter probably *can* be made to conform by the agency of glycerin. Originally buchu, valerian and several others were in the same proportion, but were raised to the full strength in 1860. In the case of rhubarb, the large amount of soluble matter in the root is incompatible with so much sugar as exists in the officinal recipe, not only because the preparation is too thick in consistence, but the small quantity of alcohol retained in the extract favors the crystallization of the sugar. This may be avoided by substituting glycerin for sugar, with perfect success, as recommended by Mr. A. B. Taylor (Proc. A. P. Assoc. 1865, p. 156), which I have recently tried with success.

Attention has been recalled to this subject by a paper of Mr. C. Lewis Diehl, in the Pharmacist of June, wherein he advocates the reduction of the entire list of fluid extracts to the proportion of 8 troyounces to the pint, in order that they may be made by repercolation (or, as he prefers to call it, "fractional percolation,") so as to avoid evaporation altogether or nearly so.

Now in regard to repercolation I appreciate its advantages in saving menstruum, especially in reference to the solid extracts, and have no objection to any pharmaceutist who is qualified to use the method to do so, for either solid or fluid extracts, but must earnestly protest against putting such complex manipulation into our pharmacopœia, (except in special instances that might be exceptional) in a class of formulæ so large and frequently used as the extracts and fluid extracts, and as a substitute for simple percolation, which itself, after twenty years tutelage the mass of pharmaceutists of the United States are only just getting to understand properly. It is well known that in the reservation of the first portion of percolates in some officinal processes the proper time of fractioning is often neglected. What then would be the condition of a working laboratory, when each fluid extract would require half a dozen kinds of percolates, each of which would require measuring and registering. Dr. Squibb, Mr. Diehl, and others may do this and keep on the track, but of the numerous body of operators who figure in pharmacy, a large number could not be trusted with repercolation who might be competent to perform a simple officinal process.

We hope, for these reasons, that the final committee of revision and publication, to be appointed in May, 1870, will be sufficiently conservative to avoid so great a mistake as the adoption of repercolation as the ordinary process of extraction for fluid and solid extracts, and it is equally to be desired that they retain the proportion of grain to minim.

After thus speaking against *repercolation* as a pharmacopœia process, it is with pleasure, and but just that we should express our admiration of that process as a refinement of percolation, that may be used by any qualified operator on any suitable occasion, and for the manufacturing pharmacist it has merits that will doubtless call it into frequent use.

GLEANINGS FROM GERMAN JOURNALS.

By John M. Maisch.

Gas Generators.—Clemens Ullgren, of Stockholm, has constructed a convenient apparatus for the generation of carbonic acid, hydrogen and sulph-hydric acid gas in laboratories. The generator consists of a cylindrical glass vessel, the mouth of which is closed by a twice perforated cork, and which, through a narrow opening at its bottom, is permanently fastened to a larger flat glass vessel, intended to receive from the cylinder the saline solution, which can be drawn off as well through a stop-cock or a bent glass tube inserted near the bottom. The generator, through the perforated cork, connects with a wash bottle by means of a bent glass and caoutchouc tube, and with the acid receiver near its bottom by means of a glass tube supplied with a stop-cock and a strong rubber tube. The acid receiver—a plain bottle perforated on one side near its bottom—is imperfectly closed by a cork, through which a bent glass tube is inserted. The author uses muriatic acid diluted with water until it ceases to give off fumes; the generator is filled with pieces of marble, zinc or sulphide of iron, which, by some pieces of glass, are prevented from falling into the vessel below; the acid is admitted by opening the stop-cock above the generator, and passing through the material in the latter is completely saturated, while a uniform current of gas is evolved. The advantages of this apparatus are that the current of gas can be regulated by the flow of the acid through the stop-cock, and can be discontinued at will; that the saline solution is not in contact with the generating material and may be drawn off even during the generation of the gas, and that the apparatus is easily handled and always ready for use.—*Zeitschr. f. Analyt. Chem.*, 1869, 43–45.

A portable sulphuretted hydrogen apparatus has been constructed by F. Jicinsky. It consists of a small glass stoppered vial, with a plug of caoutchouc firmly inserted in the upper half and with a caoutchouc stopper in place of the bottom; both the rubber stopper and plug are perforated for receiving a glass tube filled with cotton and closed at the upper end, but with a small aperture a little below; the lower end is open. Sulphide

of iron is first placed upon the caoutchouc stopper, and after replacing it and the tube, dilute sulphuric acid is poured into the upper portion of the vial. When gas is to be generated, the tube is withdrawn from the plug so as to let the acid pass into the lower portion of the vial, when the tube is again inserted into the plug, the lower portion communicating through the aperture with the open end of the tube through which the gas escapes after having been filtered through the cotton.

When the tube is pushed through the plug to near the glass stopper, the apparatus can be conveniently carried in the vest pocket.—*Ibid.*, 56–58.

Water-bath.—C. Ullgren has constructed a water-bath, which is almost identical with the water-baths in use in the restaurants and oyster saloons in the United States; the water is heated by a Bunsen's gas-lamp, and not only the direct heat, but also the heat of the hot gases of combustion is utilized.—*Ibid.* 47.

Test for Sulphur.—Dr. Schönn, of Stettin, detects sulphur in organic compounds and in all inorganic sulphosalts, sulphides, sulphocyanides, sulphates, &c., by placing a little of the dry substance in a test tube, adding a small piece of potassium or sodium, annd covering it with more of the dry substance. The tube is heated until the reduction is completed in a few seconds, when the tube is broken and its contents thrown into a dilute acid or a solution of nitroprusside of sodium; the former evolves sulphuretted hydrogen, the latter produces the well known violet color.—*Ibid.* 51–53.

Test for Phosphorus.—Dr. Schönn detects phosphorus in organic and inorganic substances by mixing the anhydrous powder with magnesium filings and heating the mixture for some time in a test tube. If now a few drops of water are added, phosphoretted hydrogen is given off and recognized by its onion-like odor; a sublimation of red phosphorus and phosphorescence is often observed, if magnesium is used in somewhat larger proportion; ammonio-phosphate of soda, phosphate of soda, burned bones, &c., show this reaction well.—*Ibid.* 53–56.

Reduction of Silver.—Gräger (N. Jahrb. f. Ph. xxix, 9,) obtains chemically pure silver from an ammoniacal solution of

chloride of silver by pure zinc. When the liquid ceases to become turbid with muriatic acid, it is poured off, the sediment washed by decantation with water, the zinc removed by passing the residue through a funnel loosely stopped with glass, the powdered silver digested with muriatic acid and afterwards washed successively with water, ammonia and water. An ammoniacal solution of nitrate of silver containing copper yields likewise pure silver, if the whole amount of zinc requisite for effecting the reduction is not added; the silver is obtained first, after which the copper is slowly reduced.—*Ibid.* 64.

Alkaloid by fermentation.—Brúche suggested, a few years ago, that an alkaloid was formed during fermentation. J. Oser fermented 50 pounds pure cane sugar, and obtained 11.747 grm. of the gold double salt = 4·846 grm. of the base; the composition of which appears to be $C_{26}H_{20}N_4$. The muriate yields in vacuo colorless scales of a somewhat burning and bitter taste, which are very hygroscopic, and on exposure turn brown. Since the base must have been generated from the yeast (pure yeast contains no alkaloid), it follows tnat it is contained in all fermented liquids, but being reanily decomposed, it may be converted into trimethylanin, which was found by E. Ludwig in wine.—*Chem. Centralbl.* 1819, 141, 142 *from Wien. Sitzungsber.* lvi, 489.

Test for Morphia.—Almén found (N. Jahrbuch f. Pharm. xxx, 37,) that Fröhde's test for morphia (beautiful violet color with sulphuric acid containing molybdic acid) is applicable also to most morphia salts; the same color is likewise produced by opium and by extracts of opium which *contain no morphia.*—*Ibid.* 77.

Test for Salicin in Quinia.—E. Parrot recommends (Zeitschr. f. Anal. Chem. v, 287) to distil a few grains of the suspected quinia with 4 c. c. of a cold saturated solution of bichromate of potassa and two c. c. of sulphuric acid prepared from 1 vol. concentrated acid with 4 vol. water. The boiling is continued for one or two minutes, so that no sulphuric acid is carried over. Salicylous acid is formed if salicin is present, and the distillate

is colored deep violet by a drop of solution of sesquichloride of iron.—*Zeitschr. des œsterr. Apoth. Ver.* 1869, 11.

Eucalyptus globulus, Labill. has, according to Schützenberger, been introduced from Australia into Spain, near Santiago, which has a very moist climate, and in July and August is usually visited by cold northern winds. The leaves are extolled as a febrifuge and anodyne.—*Ibid.*, 17.

Resina d'angelim pedra is a resin found in the cavities of old Brazilian trees, the Ferreira spectabilis, Fr., Allem. Leguminosæ, viii, Dalbergieæ. Dr. Peckolt stated that it consists almost wholly of a volatile alkaloid, which he named angelina, and which yields with acids crystallizable salts. Dr. W. F. Gintl, of Prague, finds (Sitzungsber. d. kais. Akad. d. Wissensch.) that this substance is almost insoluble in cold water, in alcohol and ether, has a neutral reaction, dissolves readily in acids without neutralizing them, and crystallizes from these solutions in combination with the acids; the compounds, however, are completely decomposed by much water. Diffused in water and boiled with little nitric acid, a rose red color is produced, changing to ruby, and finally through violet into blue; more nitric acid produces a green and finally a brown color. These colored solutions, except the last, show a beautiful red fluorescence. The liquid obtained by treating angelina with concentrated sulphuric acid, and then neutralizing with carbonate of baryta, is colored violet by ferric chloride. It fuses and volatilizes. The sublimate, however, has different properties. Its composition is $C_{20}\,H_{13}\,NO_6$. All these reactions prove the substance to be identical with the so-called rhatanin of Dr. Emil Ruge, which he found in the South American extract of rhatany, and which can not be obtained from rhatany root. Dr. G. suggests that some varieties of kino obtained from the order Dalbergieæ are used as substitutes or adulterations of extract of rhatany, which may account for its containing the so-called rhatanin, unless some portion of Krameria triandra should contain it.—*Ibid., p.* 32—37.

Syrupus Diacodii, prepared according to the Austrian Pharmacopœia, by digesting poppy heads for two hours with hot water, contains, according to Alfred Siersch, less than half the

quantity of morphia found in the ripe capsules, the greater part of which is insoluble in hot water, but soluble in dilute acids.—*Ibid.*, 53—56.

Oxide of iron containing cyanogen has been met with in commerce by H. Reinsch (N. Jahrb. f. Pharm. xxx, 8). Treated with sulphuric acid, it yielded with water a nickel green solution from which Prussian blue separated. The cyanogen must be referred to the use of either carbonate of potassa, as it is sometimes obtained in making ferrocyanide of potassium, or of carbonate of soda, since considerable quantities of cyanide are sometimes formed in the preparation of soda.—*Ibid.*, 61.

Arrowroot.—Dr. Eberhard, of Blumenau, Brazil, found the root of Maranta arundinacea to contain 20·78 starch, 68·52 water, 9·48 lignin, 1·22 ashes. The root of Manihot utilissima (cassava or mandiaca) yields 13·63 starch, 61·70 water, 23·49 lignin, 1·18 ashes. 24 square rods of ground yield of the former 1411 and of the latter 1880 lbs. The culture and exportation of arrowroot are on the increase in the German colonies in Brazil.—*Ibid.*, 81.

Yield of Extracts.—Kohlmann gives in Apoth. Ztg. the following table, but remarks that various circumstances—locality of growth, relative dryness of the drugs, and manipulation, may considerably influence the results. The spirituous extracts were prepared according to the Pharm. Germ., and if that contains no formula, according to the Prussian or Saxon Pharmacopœias:

	Per cent.		Per cent.
Extr. absinthii,	18 00	Extr. hellebori vir,	15·79
" aconiti e tuber.	28·33	" lupuli plv. sic.,	13·20
" arnicæ flor.,	28·00	" millefolii,	27·44
" aurantii,	27·33	" pimpinellæ,	23·33
" calami,	25·00	" polygalæ,	39·16
" cannabis indic.,	13·33	" rhei,	51·72
" chamomillæ (matricar.),	25·00	" sabinæ,	22·22
" chinæ (cinch.),	18·21	" sarsaparill.,	8·61
" colocynthid.,	9·82	" scillæ,	66·66
" columbo,	9·97	" secal. corn.,	11·60
" fol. jugland.,	23·61	" strychni (nuc. vom.) mas.	
" guaiaci,	14·00	" pil.,	11·33
		" strychni pulv.	9·5

—*Ibid.*, 127.

Allyl compounds. B. Tollens and A. Henninger observed that a mixture of 4 parts glycerin and 1 oxalic acid, heated to 190° C., contains formiate of glycerin (monoformin), which may be dissolved out by ether; it liberates with water formic acid, but yields on distillation carbonic acid and allylic alcohol. The above mixture distilled at 190 C. yields allylic alcohol, allyl-formic ether, acrolein, &c. The allylic alcohol treated with bromide of phosphorus yields bromide of allyle, which with sulphide of potassium forms sulphyde of allyle (oil of garlic), and with sulphocyanide of potassium, oil of mustard; the latter is also obtained by distilling allyle-sulphate of potassa with sulphocyanide of potassium. The oils obtained by either process are identical with that obtained from the seed. This method is used with advantage for manufacturing the volatile oil.—*Zeitschr. f. Chemie*, 1869, 88—90.

Valerianic acid.—C. Stalmann has again examined the natural and artificial valerianic acid with the view of determining their asserted difference. He found the salts of strontia, zinc and quinia (the latter contains 1 equiv. acid, 1 of base, and 1 of water) of both acids precisely alike; but while the baryta salt of the true acid would be readily obtained in large laminæ, when the solution was evaporated in vacuo over sulphuric acid, the salt from the artificial acid would yield only a thick syrup; he therefore regards the two acids as isomeric but not as identical.—*Archiv d. Pharm.*, 1869, *March*, 258. *From Ann. d. Ch. und Pharm.* 1868, *Aug.* 129—134.

To determine an adulteration of glycerin with sugar.—A. Vogel adds to 5 drops of the suspected liquid 100 to 120 drops of water, and about 4 centigr. molybdate of ammonia with 1 drop of pure nitric acid; after boiling, an intense blue color is produced if but a trace of sugar was present. Dextrin does not give as reliable a reaction; the copper test for glucose is preferable to detect it.—*Buchner's N. Repert.*, 1869, 24.

"SWEET QUININE:" WHAT IS IT?

By the Editor.

We have been repeatedly asked the nature of the substance

thrown into commerce by Mr. Frederick Stearns, under the name of "sweet quinine." In the March number of this journal, page 187, we gave a statement based solely upon the manufacturer's circular (not then having examined the article), from which we naturally inferred it to be the alkaloid quinia, associated with liquorice sugar. The following are the paragraphs: "Sweet quinine is as definite a chemical salt as the sulphate (or bitter) quinine—is made direct from the same source—Peruvian bark; has, like it, positive tonic and antiperiodic power," &c.

"In sweet quinine each atom of the alkaloid is enveloped in *glicion*, the sweet principle of liquorice, and it forms an aggregation of minute sugar-coated molecules of quinine." Nothing is said about any other alkaloid than quinia, and it is clearly intended that the reader should infer from the words used that the manufacturer's skill has succeeded in combining free quinine with glycyrrhizin in lieu of sulphuric acid, so as to mask its bitterness.

Having within a few days (June 28) had our suspicion excited, we determined to examine it, and have satisfied ourself that this so-called sweet quinine is no quinine at all, but mainly the alkaloid *cinchonia* precipitated from the sulphate, dried and triturated with an impure glycyrrhizin prepared from liquorice root. Cinchonia is very insoluble, requiring nearly 4000 parts of cold water, hence the tastelessness of "sweet quinine," and its bitterness with acid or alcoholic fluids which salify and dissolve it. The substance associated with it is nearly all removed by hot water, to which it gives a straw-color. It froths much by agitation, and has a power of suspending or emulsifying the finely powdered cinchonia. These statements are based on the following experiments:—*sweet quinine* laid on reddened litmus paper and touched with a drop of alcohol restores its blue tint immediately. The same occurs more slowly with a drop of water. It is almost wholly soluble in boiling alcohol in excess, yielding a light straw-colored alkaline solution. Treated with boiling water and well washed on a filter, it yields about 25 per cent. of its weight to that fluid, which acquires a straw color, froths much by agitation, is without bitterness, and not precipitated by subacetate of lead or alcohol. Weak iodine water gives a greenish color which soon fades, indicative of a trace of starch. Evapo-

rated, this liquid deepens in color, and separates a dark film which remains insoluble. As the liquid concentrates its sweetness increases, and its taste is that of liquorice root. The residue insoluble in water was dried and treated with boiling alcohol, in which it dissolves, except some flocculent impurities of a dark color, probably derived from the liquorice root. The alcoholic solution precipitated crystals by cooling and by evaporation, on standing.

These crystals were soluble in dilute sulphuric acid, forming a crystalline salt, which, when dissolved in an excess of chlorine water, gave, on the addition of ammonia a white precipitate, like cinchonia produces, without the *slightest* trace of green to indicate quinia. When the salt was added to a solution of ferrocyanide of potassium, (Dr. Bill's test for cinchonia) a yellow curdy precipitate fell, which by gently heating became crystalline on cooling. When the salt is dissolved in a little water in a test tube, and ether added followed by ammonia, and shaken, the liquids separate and leave a whitish insoluble layer at their juncture. When treated by Herapath's test no indication of green Herapathite crystals was obtained but the brown precipitate, followed on standing by the dense, almost black crystals usual with cinchonia. There can be no doubt, from these results, that "sweet quinine" consists of about three parts of cinchonia and one of impure glycyrrhizin. Quite possibly there may be some cinchonidin also present, in small quantity, but no examination has been made for it. To what extent the glycyrrhizin acts as an acid towards the cinchonia we do not know, but its well-known affinity for bases renders it quite possible that such a relation might exist, though we incline to believe the union to be mechanical by trituration, as stated by the circular. We confess to being surprised at this result, when viewed in connection with the circular of Mr. Stearns. The *morale* of the affair is doubtful—cinchonia, however tasteless is not quinine, nor does its commercial value approach that of quinine so nearly as it is made to do in the garb of "sweet quinine." When physicians want cinchonia they can get it by prescription, and it is not in accordance with our ideas of fair dealing to serve it up as a new substance.

COMPARATIVE EXAMINATION OF THE IPECACUANHAS OF BRAZIL AND NEW GRENADA OR CARTHAGENA.

By M. J. Lefort.

The author (*Jour. de Pharm.*, Mars, 1869,) after alluding to the history of Brazilian Ipecacuanha and its botanical origin, remarks as follows: But, in certain parts of South America, another sort of Ipecac is found, to which we desire to draw attention.

Since about twenty years, the growing success of the cinchona trade of New Grenada on the one part, and the constantly advancing price of the Ipecac of Brazil, occasioned by the scarcity of the plant which furnishes it, on the other part, have given the idea to the Americans to collect and send to Europe, under the name of New Grenada or Carthagena Ipecacuanha, a variety of Ipecac which grows in great abundance on the torrid banks of the river Magdalena.

This Ipecac is without doubt the variety designated by M. Guibourt under the name *Ipecacuanha annelé majeur* or *Ipecacuanha gris blanc de Merat* (Hist. des Drogues, t. iii.) This savant presumed it to belong to the genus Cephælis, but a different species from that of Brazil.

Although M. Weddell did not find Cephælis ipecacuanha beyond the frontiers of Brazil, it appears from the inquiries of M. Triana, accompanying the products of New Grenada at the Universal Exposition at Paris, that it is derived, as supposed by M. Guibourt, from a species of Cephælis not yet described by botanists.

Save in its color, which is always greyish, or lightly reddish, and in the size and length of its roots, this kind of Ipecac, by the disposition of its rings, presents so much resemblance to that of Brazil, as to account for its introduction into Europe. Nevertheless, the first parcels received in France were not accepted with much favor by druggists, partially because normal Ipecac was plenty, and because it was deemed a false ipecac much inferior to the latter. But in four or five years this opinion was changed by greater care in collecting the root, and it gradually acquired a true importance in the market, until at present its commercial value is nearly equal to the Brazilian.

But whilst druggists appear to be satisfied with the new Ipecac from its physical characters, pharmaceutists have had some hesitation to adopt it in the absence of direct analysis and therapeutic trials, and it was with the motive of settling by analysis the real character of this Ipecac that the author undertook this paper.

1. Pelletier and M. Dumas, tracing for the first time the chemical history of emetia, remarked that this alkaloid produces a very insoluble tannate; this reaction has been used to determine the proportion of emetia contained in each of the commercial varieties.

A certain weight of powdered Ipecac dried at 212° was exhausted, first, with warm alcohol, and then with diluted alcohol, the solutions united and evaporated to a syrupy consistence. The residue was treated with fifteen to twenty times its weight of water, the solution filtered and a slight excess of tannin added, which caused an abundant precipitate of tannate of emetia. This precipitate, collected on a tared filter, was washed, and dried in a stove. This process unites great precision with readiness of execution, and has enabled us to discover that New Grenada Ipecac is always a little less rich in emetia than that of Brazil.

The following results were obtained in operating on ten grammes (154 grains) of the powder of each kind, deprived of the woody portion:

Ipecacuanha of Brazil.			*Tannate of Emetia.*
First experiment	100 grammes	yielded	1·441 grammes.
Second "	100 "	"	1·458 "
Ipecacuanha of New Grenada.			
First experiment	100 grammes	yielded	1·380 grammes.
Second "	100 "	"	1·302 "

2. In studying the chemical properties of emetia M. Lefort has discovered that its nitrate enjoys the rare property of being but little soluble in water, so that an aqueous solution of acetate of emetia is precipitated voluminously by nitrate of potassa, which precipitate agglutinates into a brown extract like mass very soluble in alcohol.

The author tried this reaction as an assay, operating on an

aqueous solution of the alcoholic extract of each drug with nitrate of potassa.

Nitrate of Emetia.

100 parts of Brazil Ipecac yielded 1·350 parts
100 " " New Grenada Ipecac " 1·082 "

It results from these researches that whilst the Brazil Ipecac is a little richer in alkaloid it appears also to contain more of the resinoid odorous matter and more of the brown coloring matter. As regards the proportion of ligneous fibre in each,

100 parts of Brazil Ipecac gave 18·75 parts.
100 " " New Grenada " " 20·01 "

In conclusion, the author is of the opinion that, though allied in composition and properties, the pharmaceutist should not use them indiscriminately, but should prefer the Brazilian variety, but if the time should arrive when the latter should become exhausted, the New Grenada variety will offer a valuable succedaneum. [See continuation on Emetia, following.]

ON THE PREPARATION, PROPERTIES AND COMPOSITION OF EMETIA.

By M. J. Lefort.

In this essay, which is a sequel to that on Ipecacuanhas, at page 305, the author gives a sketch of the chemical history of this alkaloid, and especially notices the process of M. Leprat (1853), who bases his method on that of Rabourdin for atropia by potassa and chloroform. By a modification of this process the author proceeded as follows:

Ipecacuanha powder was exhausted by percolation, first with alcohol 86° and then with alcohol 56° (centesimal); the tinctures united are thrown into a distillatory apparatus to recover the alcohol, the residue being concentrated in a water bath to a syrupy consistence.

This residue, which contains the emetia in combination with a peculiar organic acid, ipecacuanhic acid—which M. Willick has investigated (Jour. de Pharm. t. xx, p. 276, 1851)—is thrown into a flask, with glass stopper, adding 2 parts of caustic potassa, dissolved in a little water, for each 100 parts of the powder employed, and then as much chloroform as equals in vol

ume that of the mixture. As emetia is very soluble in potassa, and as the alkaline solution absorbs oxygen rapidly from the air, the flask in which the reaction is effected should always be full.

The mixture is agitated violently, and left to repose during many days; the chloroform, which forms a kind of emulsion, separates little by little, occupying the bottom of the vessel. This is decanted and replaced by a new portion of chloroform.

As soon as the washings are nearly colorless, they are united, filtered, and the chloroform regained by distillation, by aid of a water bath and retort.

The residue in the retort is deep brown, and composed principally of emetia and resinoid matter, which last, according to Pelletier and Magendie, is not emetic. The emetia is separated by a weak acid, which dissolves only the alkaloid. The solution is then decomposed by ammonia, avoiding any excess, as emetia is soluble in ammoniacal water. Emetia is then deposited as a bulky greyish powder, which is washed with distilled water by decantation, and collected on a filter.

It is finally digested with ether, to remove a trace of resinoid matter, and dried, when the alkaloid, of great purity, is obtained.

Properties. When it has been precipitated from saline solutions by ammonia, and dried at a temperature below 133° Fahr., emetia presents the form of a very light greyish powder, if it has not been perfectly purified, and whitish if it is very pure.

It is nearly odorless, and its taste bitter. It fuses at the temperature of 158° Fahr., and assumes the form of a brown transparent extract.

Exposed freely to the air it becomes light brown colored, but does not attract humidity so as to become liquid, as stated by Pelletier and Magendie.

At 59 Fahr. water dissolves one-thousandth of its weight, and the solution possesses always a yellowish tint, as well as an alkaline reaction. Alcohol and chloroform dissolve it in all proportions, and it never crystallizes by their evaporation. It is but slightly soluble in ether and the fixed oils. Solutions of the caustic alkalies dissolve it very readily, and the solutions rapidly ab-

sorb oxygen from the air. Caustic ammonia is not a good solvent, yet ammoniacal water retains a portion of it. Caustic lime and magnesia also, in presence of moisture, favor its oxidation, and give it a saffron color.

Chlorohydric, sulphuric, phosphoric and acetic acids easily saturate emetia, producing salts, which are all uncrystallizable, and very soluble in water.

Nitric acid, on the contrary, forms a salt but slightly soluble, by double decomposition between a soluble salt of emetia and nitrate of potassa. The precipitate, at first bulky, soon agglutinates into a brown mass. It is uncrystallizable, and requires 100 parts of water for solution.

The insolubility of its nitrate forms the most distinctive chemical character of emetia, urea being the only other base which has the same characteristic.

Tannin precipitates emetia abundantly in aqueous, alcoholic or saline solutions.

Iodureted iodide of potassium also precipitates it, and bichloride of mercury and iodohydrogyrate of potassium form white compounds insoluble in water, but soluble in alcohol.

The platinum chloride double salt, however, is soluble in water but not in alcohol.

Emetia is also precipitated from its salts by molybdate of ammonia.

Composition. In 1823, Pelletier and Dumas stated the composition of emetia per cent. to be carbon 64·57, nitrogen 4·30, hydrogen 7·77, oxygen 22·95.

These numbers accord with the formula, $C^{30}\ H^{22}\ NO^{8}$.

But the capacity of saturation had not then been determined. M. Lefort, by careful experiments with very pure emetia, has made the sulphate and chlorohydrate neutral, and dried them at 100 F.

a. Sulphate of Emetia. I. 0·913 grm. of the salt gave 0·0711 of sulphuric acid, or 7·79 per cent.
II. 0·563 grm. of the salt gave 0·042 of sulphuric acid, or 7·31 per cent.

The formula $C^{60}\ H^{44}\ N^{2}\ O^{16} + SO^{3}$ requires 6·60 of acid per cent.

β. Chlorohydrate of Emetia.—I. 0·819 of the salt gave 0·0436 of chlorine, or 5·33 per cent.

II. 0·368 of the salt gave 0·0217 of chlorine, or 5·89 per cent.

The formula C^{60} H^{44} N^2 O^{16} + HCl requires 5·91 per cent. of chlorine.

The author therefore thinks that these results require the formula of Pelletier and Dumas to be doubled, and hopes that further analytical research on the salts of emetia will corroborate his results.—*Jour. de Pharm.*, Avril, 1869, p. 241.

ON THEVETINE.

By M. Blas.

The *Thevetia neriifolia* is a tree of the family Apocyneæ, which grows in the West Indies, New Grenada, Peru, and the East Indies; its bark is considered a powerful febrifuge. Its seeds contain, according to Prof. de Vry, nearly 57 per cent. of a nearly colorless fixed oil, odorless, with a taste analogous to that of sweet almonds, and a poisonous principle which is a glucoside. It is extracted from the bruised seed by alcohol, after the fixed oil has been removed first by pressure, and then by ether, and the marc extracted by cold water and dried. The alcoholic liquid by evaporation deposits a white crystalline powder, having an extremely acrid taste.

When thévétine is boiled with diluted hydrochloric or sulphuric acid it is transformed into glucose and a resinous body, which he calls thévéresin.

This thévéresin, that has been purified by precipitating its alcoholic solution by water, constitutes an amorphous powder, which agglutinates readily. It is inodorous, has a weakly bitter taste, is poisonous, and is nearly insoluble in cold water and ether.

M. Blas, after a series of experiments, arrives at the following conclusions: 1. Thévétine and thévéresin are poisons sufficiently potent to cause death, in small doses. 2. Thévétine is not transformed in passing in the organism. 3. The poisonous action of thévéresin differs little from that of thévétine. 4. Thévétine

accumulates in the liver, and chemical analysis finds it neither in the urine, the blood, nor in the milk.

M. Blas has analysed these principles, and attributes to them the following formulæ:

Thévétine C_{54} H_{84} O_{24} 3HO.

Thévéresin C_{48} H_{64} O_{18}.

—*Jour de Pharm. Mai*, 1869, *et Rep. de Pharm.*

ON THE PRODUCTION OF OPIUM NEAR BERLIN.

By Dr. C. O. Harz.

Professor H. Karsten has repeatedly called attention to the importance of, and the profit arising from, the culture of opium in Germany, in connection with the poppy seeds which yield a fine bland oil. Former observations made on the Berlin experimental farm, (Akklimatisationsfeld), having demonstrated that the variety of poppy known as gigantic poppy yielded most seed, and that the blue and white poppy were little inferior, another experiment was made in 1864 with these varieties on the same farm. The plants throve well in the meagre but well manured sandy soil, and yielded opium with all the physical properties of good Smyrna opium. According to Marggraff, it yielded from

Giant poppy 66·3 per cent. soluble constituents, 13·6 per cent. alkaloids, of which 9·3 per cent. was morphia.

Blue poppy 70·1 per cent. soluble constituents, 10·7 per cent. alkaloids, of which 8·0 per cent. was morphia.

White poppy 69·6 per cent. soluble constituents, 8·0 per cent. alkaloids.

The last two samples were too small to yield exact results; they surpassed the former in intensity of odor, and Marggraff supposes would have yielded the same amount of morphia if they had been in larger quantity.

In 1866 Prof. Karsten raised the poppy near Charlottenburg; the seed was sown in rows, each pair being six inches apart, and separated two feet from the next pair of rows. The young plants were thinned to a distance of four inches, and about eight days after they shed their flowers, when the capsules were of the size of a walnut, a special incision from the base to the

apex was made with the precaution not to cut through the inner integument of the capsule. From many experiments Karsten found the spiral incision the most profitable; a horizontal circular incision about one-third above the base yields nearly the same amount of milky juice; numerous vertical incisions are objectionable. The knife used for this purpose was protected just above the point by twine or by a rag, to prevent it from penetrating into the interior cavity. After a few minutes the juice was removed with the finger into a suitable vessel and subsequently inspissated by means of a water bath; a second incision after a few days proved unsuccessful.

This opium yielded two-thirds of its weight to distilled water and contained 10 per cent. morphia. Of the same quality was opium obtained by Hermes near Hermsdorf, from the giant poppy cultivated as stated above. R. Schulze, of Pankow, obtained from the same poppy, opium, one-half of which was soluble in water, and which yielded likewise 10 per cent. of morphia.

The author obtained the opium made at the latter place in 1867, and described it as hard, tough, of a grey-brown color, similar to German lactucarium, somewhat shining and made up in part of tears of the size of a pea and smaller; it was with difficulty rubbed into a light grey powder; its odor was stronger than that of Smyrna opium, reminding somewhat of lactucarium; taste like that of the best opium. The tincture was scarcely one-third as dark as if made from Smyrna opium. Fifteen grm. yielded, to cold distilled water, 7·41 grm.= 49 per cent. soluble constituents, from which alcohol precipitated 1·41 grm.= 9·4 per cent. gummy matter and salts. The filtrate treated with ammonia yielded in ten days 1·63 grm.= 10·9 per cent. crystals of morphia. The residue left, by water, yielded to alcohol 7 per cent. resinous matter, and to chloroform 14 per cent. of a caoutchouc like mass.

The results are satisfactory, and it is to be hoped that with continued practical and theoretical observations the yield of a still richer opium may be expected, like the rational culture of the cinchonas in the East Indies produces bark richer in alkaloids, particularly quinia, than the South American.

The author appeals to apothecaries and agricultural schools to

assist those who are willing to raise this important drug; he regards the absence of the dark coloring matter as favorable for obtaining morphia, and thinks that the few pounds which are still needed in Germany for those antiquated physicians who mostly prescribe opium, may still be imported from the East.—*Zeitschr. d. œsterr: Apoth. Ver.* 1869, 12–16, *from Wittst. Viertelj. Schr.* xvii, 481.

PRERARATION OF ALCOHOLIC NARCOTIC EXTRACTS.

By Franz J. Kral, of Prague.

The process of the Austrian Pharmacopœia for preparing alcoholic extracts fresh from narcotic herbs, the author has for some time past used; the following is the process which yields extracts of strong narcotic odor, soluble in water without turbidity and of undoubted physiological properties.

To each pound of the fresh herb 3 oz. of distilled water is taken, and the whole mashed in a porcelain mortar to a pulp and expressed. The juice is set aside in a cool cellar for 8 or 10 hours and carefully decanted from the sediment. The clear liquid is heated in a steam-bath for 5 minutes to 75°C. and then again set aside in a cool place for 6 to 10 hours, when it is passed through a close strainer and the filtrate at once evaporated in a porcelain capsule by means of a steam-bath, at a temperature not exceeding 70°C., to a syrupy consistence, when it is allowed to cool, mixed with 1½ times its volume of stronger alcohol, and the mixture digested for four days.

Meanwhile the wet residue upon the strainer is digested with 1½ times its weight of alcohol, then strained and the residue expressed. Both alcoholic liquids are now mixed, filtered and the filtrate concentrated either in vacuo or in a still by means of a steam-bath, and finally evaporated to the proper consistence.

If one part of this extract is mixed with four parts of powdered sugar, or with three parts of sugar and one part of powdered liquorice root, milk-sugar or gum arabic, and the mixture is carefully dried in a steam-bath, the resulting powder remains perfectly dry if kept in well stopped bottles.

Extract. hyoscyam. thus prepared and recently dissolved in

water, is in some cases much more reliable than the powdered; thus patients suffering with a spasmodic cough were much relieved by 2 one grain doses, taking morning and evening. M. —*Zeitsch. d. œsterr: Apoth. Ver.* 1869, 41–42.

ON ACONITIA AND PSEUDO-ACONITIA.

By M. F. Hubschmann.

M. Hubschmann has made a comparative study of aconitia found in English commerce and that prepared by himself by the process of Geiger.

The aconitia extracted by him from the fresh roots of aconite with blue flowers, collected in Switzerland, presents the form of an amorphous white powder, not adhering to paper. It has a decided bitterness, but little acrimony, is alkaline, and burns without leaving a residue. It is soluble in two parts of ether, 2·60 of chloroform, and in 4·25 of alcohol. Each of these three solvents leaves an amorphous, colorless mass, of a vitreous non-crystalline appearance. Benzine softens it to a resinous mass and slowly dissolves it. Heat causes it to dissolve quickly. In boiling water it is softened and becomes hard and brittle on cooling. Sulphuric acid dissolves it and is colored yellow, which is not changed on the addition of nitrate of potassa.

English aconitia is, to the contrary, a fine powder, very adherent to paper, dirty white colored and burning without residue. It is but little soluble in ether, cold or hot, but the ethereal solution by evaporation deposits little white crystals. It requires 250 parts of chloroform for solution, and this, on evaporation, yields little crystals. Twenty parts of boiling alcohol dissolve English aconitia, which crystallizes by cooling. Cold benzine don't dissolve or affect it. When heated it dissolves and is precipitated by cooling, partly in crystals and partly amorphous. It is not colored by sulphuric acid pure, or with nitrate of potassa.

If it is admitted that English aconitia is really extracted from a variety of aconite (a point which is not clearly proven to the author.) It is certain that it has no more claim to be aconitia than narcotin has to be morphia.—*Jour. de Pharm., Mai*, 1869, *from Jour. D'Anvers.*

ON CRYSTALLIZED DIGITALIN.

By M. C. A. Nativelle.

In the *Moniteur Scientifique* of Feb. 15, 1867, the author published a memoir addressed to the Belgian Academy of Medecine the previous year for the *concours* which it had opened on digitalin.

Since that time, after many difficulties he has obtained this new substance by a more direct means, avoiding the operation with tannin and oxide of lead, and by separating by means of chloroform an abundant crystallizable principle which is *wholly without taste.*

This principle is less soluble in alcohol than crystallized digitalin, and deposits first soon after the cooling of the liquor; afterwards the digitalin in radiated crystals appears. This difference caused the author to suppose it a modification of digitalin by heat, and the less intense bitterness of the mixture favored this view; but crystallized digitalin, on the contrary, is a stable substance which is not affected by the heat of boiling water. The sample of crystallized digitalin in the Paris Exposition, sent by him, contained about *two-thirds* of its weight of this inert substance.

Extraction of Crystallized Digitalin.—Crystallized digitalin is found in *the residue of digitalis exhausted by water*, in the process for obtaining the amorphous digitalin in use under that name. This residue, considered as useless, contains the most interesting ingredient and true principle of digitalis.

Mix 100 parts of coarsely powdered digitalis of the woods, (collected in May before the development of the floral stem, when the leaves are richest in activity) with 100 parts of water and 25 parts of crystallized acetate of lead; twelve hours after percolate the mixture with water, after packing it in a cylinder, until 300 parts of liquid is obtained, which set aside. Dry the residue in the percolator, and treat it with alcohol of 50 per cent. until deprived of taste. When about 300 parts of tincture have passed add to it 4 parts of crystallized acetate of lead, filter, and into the decolorized liquid throw a solution containing two parts of phosphate of soda. Separate this new precipitate and distil the liquid by a water-bath to regain the alcohol. The residue

of the distillation holds in suspension numerous little crystals mixed with a sticky yellowish matter strongly bitter. The crystals are not digitalin, which last is in the yellow matter. This is evaporated in a water-bath till reduced to about 10 parts. Separate this matter from the dense liquid, wash it with a little cold water and spread it on porous papers to dry. Two or three parts of this substance are obtained, which is dissolved hot in a flask with double its weight of alcohol and set aside in a cool place. The inert crystalline substance is deposited first, and after some days yellowish radiating crystals of digitalin appear among them. When the latter cease to increase put the whole on a funnel closed with cotton, allow the mother water to drain, and then wash them with alcohol of 15 per cent. The crystalline residue is then dissolved in boiling alcohol of 80 per cent., boiled with a little animal charcoal, filtered, concentrated to one-half and allowed to become a crystalline mass on cooling. After several days separate the mother water, dry the crystals, powder them and put them in a flask with 20 parts of pure chloroform and agitate well. The digitalin only is dissolved, and is obtained by distillation to regain the chloroform. The digitalin in this state has a yellowish color, to remove which and get it white it is necessary to dissolve it in boiling alcohol, agitate with a little carefully prepared animal charcoal, filter and crystallize. 1000 parts of digitalis, *after* it has been exhausted by water, yields one part of pure crystallized digitalin.

Properties and analysis. Thus obtained digitalin is neutral, odorless, intensely and persistently bitter like digitalis, and contains no nitrogen. Its insolubility in water causes its taste to be slowly developed unless aided by alcohol. It is very soluble in chloroform; in 12 parts of alcohol of 90 per cent. and in 6 parts boiling; less soluble in anhydrous alcohol; ether free from alcohol dissolves but a trace. Even boiling water dissolves very little yet acquires a decided bitterness.

Sulphuric acid dissolves it with a greenish tint which becomes reddish by bromine vapor.

Nitric acid dissolves it without color at first, but afterwards is yellowish.

Muriatic acid dissolves it with a greenish yellow color passing

to emerald green, which, in dilution with water, forms greenish resinous flocks.

Heated to 212° F. it softens and becomes elastic; heated on platina foil it fuses without coloring and evaporates in white vapor, partially decomposed leaving no traces.

M. Lebaigne, of the analytical laboratory of the Pharmacie Central de Paris, in a mean of two analyses obtained C51·33, H6·85, O41·82= to $C^{39}H^{39}O^{30}$.

The inert crystalline substance is neuter and contains no nitrogen. It is insoluble in chloroform and ether free from alcohol, but soluble in alcohol, especially hot; water dissolves it but slightly. Sulphuric acid is colored purplish red; nitric and muriatic acid are not colored, and when heated it fuses and is consumed without residue.—*Jour. de Pharm.*, Avril, 1869.

ON THE BEHAVIOUR OF MANNITE TO ALKALINE SOLUTION OF COPPER.

By C. Scheibler.

If caustic lime and precipitated oxide of copper are added to solution of mannite, both oxides are dissolved in different proportion; this solution kept at a temperature of 60 to 70°C. separates cuprous oxide. In the presence of sufficient quantities of lime and cupric oxide and under the same external conditions, the reduction continued for several months without becoming finished.

The liquid filtered from the cuprous oxide had a blue color from dissolved cupric oxide, which was removed, together with the lime, by carbonic acid. The filtrate contained, besides unaltered mannite, the lime salt of the acid formed by the decomposition of the former. Neutral acetate of lead was without action; but the basic salt produced a precipitate soluble in an excess of the reagent. The white lead salt was well washed, decomposed by sulphuretted hydrogen, and the filtrate evaporated on the water-bath.

The acid thus obtained is a colored syrup, remaining liquid even over sulphuric acid. It decomposes energetically the alkaline carbonates, reduces, when heated, ammoniacal solution of silver,

forming a dull mirror, but does not effect the solution of cupric oxide in potassa; it prevents, like all nonvolatile organic acids, the precipitation of ferric oxide by ammonia; all its salts appear to be soluble in water and alcohol, with the exception of the basic lead salt.

The author used pure mannite for the above experiments, and satisfied himself of the total absence of glucose, cane sugar and allied compounds. The filtrate from the insoluble lead salt yielded, by proper treatment, the greatest portion of the mannite without alteration.

These experiments prove that to distinguish the different kinds of sugar by their behaviour to alkaline solution of copper, is correct only as far as the time of their mutual action is taken into consideration.

That cane sugar, though in an inferior degree, possesses the power of reducing cupric oxide from its alkaline solution, has been known for some years; mannite has the same behaviour. The close relation between mannite and glucose was proven by Linnemann's discovery in 1862, that grape sugar in contact with nascent hydrogen is converted into mannite. $C_{12}H_{12}O_{12}+2H=C_{12}H_{14}O_{12}$ (mannite).--*Chem. Centralbl.* 1869, *No.* 6, *from Zeitsch. d. Ver. f. Rübenzucker Indust.* xiv, 849, xvi, 670.

ON THE INFLUENCE OF DRYING ON THE ACTIVE PRINCIPLES OF PLANTS.*

By Dr. Leopold Schoonbroodt, Apothecary at Liege.

The author extended his examination to 29 plants, selected for the importance and frequency of their use in medicine. The process of examination was based upon the principles of Stas' method.

The carefully selected plants, when possible collected of wild growth, were divided into two equal parts, one of which was dried, if necessary, with artificial heat, then powdered, the loss in drying replaced by water, after maceration for 24 hours dis-

* Condensed from Wittstein's Vierteljahresschr. für prakt. Pharm. 1869, p. 73–110. The author, who died Dec. 1, 1866, was by the Société Royale des Sciences Médicales et Naturelles de Bruxelles, awarded a gold medal for this essay, which was published in Journ. de Medic. de Brux. 1867 and 1868.

placed with 95 per cent. alcohol, and the tincture treated like that of the fresh portion.

The other half of the fresh plant was reduced to small fragments, macerated with 95 per cent. alcohol for 24 hours, then expressed and again macerated as before. The liquids were united, filtered and distilled at a temperature of 56 to 60°C, the residue filtered and the filtrate evaporated over sulphuric acid under a bell glass; the residue upon the filter was kept separate.

The treatment of plants containing alkaloids was modified by adding tartaric acid to the tincture, to insure the solubility of the alkaloid in the aqueous solution of the alcoholic extract.

Treatment of the dry extract. 1. *Plants with alkaloids.* The dry extract was mixed with its own weight of burned lime, the mixture treated with twice the weight of 95 per cent. alcohol, and after 24 hours with four parts of ether, well agitated and then decanted; the sediment was twice treated in the same manner. The liquid was evaporated spontaneously, the residue dissolved in dilute sulphuric acid, filtered, precipitated by carbonate of potassa and dissolved by absolute alcohol.

This second evaporation usually yielded the alkaloid crystallized, particularly from the fresh plants. In the case of liquid alkaloids, caustic instead of carbonate of potassa was taken, and ether in place of alcohol; after proving its identity, the quantity of the alkaloid was estimated by titration with oxalic acid.

The comparative treatment of plants with alkaloids frequently gave very exact results, particularly when the alkaloids or their salts are crystallizable; this was less frequently the case when the plants contained no alkaloids and the active principle is incompletely characterized.

2. *Plants without alkaloids.*—The dry extract was treated with strong ether, and the filtrate evaporated spontaneously; the undissolved portion was treated with a mixture of 8 vol. strong ether and 2 vol. 95 per cent. alcohol, and the filtrate evaporated spontaneously. The residue was treated with cold distilled water, and the liquid evaporated over sulphuric acid.

The following contains the results obtained by the author with the most important drugs.

Plants and when collected	*Tincture.*	*Distillate.*	*Residue on Filter.*	*Extract.*	*Treatment with CuO and Alcoholic Ether.*
Atropa belladonna. Leaves, June, fresh.	Dark green, bitter.	Almost inodorous and tasteless, no reaction.	Deep green, almost wholly chlorophyll.	Dark brown; faint odor, intense taste.	White, amorphous, alkaline. * Yields 0·53 grm.
Dried.	Brown yellow, bitter.	Inodorous, tasteless.	Brown, resinous, inodorous, sol. in ether.	Blackish; taste bitter and sweetish.	Crystallized with difficulty, but saturated same amount of acid.
Hyoscyamus niger. Leaves, June.	Deep green, odor virous, taste acrid.	Odor and taste faint, no reaction.	Dark green, soluble in ether, apparently fat and chlorophyll.	Brownish, bitter.	White, amorphous. By SO_3 and $KOCO_2$ colorless needles, yield ·41 grm.
Dried.	Deep brown, inodorous.	Inodorous, tasteless.	Black, pitch-like, sol. in ether.	Brown, inodorous, bitter.	Uncrystallizable, faint alkaline reaction.
Datura stramonium. Herb, July.	Dark green, acrid and bitter.	Weak, disagreeable odor and taste.	Blackish; virous odor; fat, resin and chlorophyll.	Light brown, bitter, somewhat acrid.	Crystalline, bitter, acrid, yield 0·65 grm.
Dried.	Brown, bitter.	Inodorous, tasteless.	Blackish, inodorous.	Brownish, bitter.	With difficulty crystallizable, same saturating power.
Solanum Dulcamara. Stems, late in Sept. The same results with the dried stalks.	Light greenish yellow; odor unpleasant; taste sweet, bitterish.	Disagreeable odor.	Dark green, slight odor.	Greenish brown, sweet, bitter and slightly acrid.	Amorphous; when reprecipitated from SO_3 and treated with alcohol: crystals of solania. The lime retained a yellow amorphous glucoside, probably picroglycion.
Colchicum autumnale. Corms, November.	Yellowish, sweet and burning taste.	Acid reaction; slightly acrid.	Greenish; faint odor of benzoin.	Orange yellow.	Alkaline needles intermixed with greenish amorphous acrid matter, acids and alkalies destroy alkaline reaction and crystalline structure.
Dried.	Darker; more bitter.	No reaction, odor or taste.	As above.	Brownish.	White amorphous colchicia, without alkaline reaction.
Aconitum Napellus. Cultivated leaves, June.	Deep green; bitter, then acrid.	Acid reaction; burning taste; salts of Ag, Au, and Pt, reduced.	Dark green; virous odor; taste slightly acrid and bitter.	?	The result treated like dulcamara yielded ·30 grm. needles (aconellina ?) and about ·30 grm. oily aconitia, gradually becoming resinous.
Dried.	Brown; bitter acrid.	No reaction, odor or taste.	Blackish; slightly acid and acrid.	?	Amorphous, resin-like.
Conium maculatum. Leaves, May.	Green; repulsive odor; very acrid.	Neutral, tasteless, faint narcotic odor.	Green, oily; virous odor.	Light-brown.	0·35 grm. conia.
Dried.	Light brown; taste weaker.	Nearly inodorous.	Black, resinous, inodorous.	Brownish.	0·10 grm. conia and products of decomposition.

* From 250 grammes of the fresh drug; the subsequent figures refer to the same weight.

The leaves of Anemone pulsatilla, collected in April, yielded fresh, but not dried, anemonin, little amorphous alkaloid and a yellow, very acrid resinous matter.

Chelidonium majus, (herb) collected in July, yielded, after drying, only chelidonina, but no chelerythrina.

Nicotiana tabacum, (leaves) collected in July, yielded two grm. pure nicotina; after drying scarcely half the quantity.

Digitalis purpurea, (leaves, June). The extract yielded to alcoholic ether 0·60 grm. of a straw yellow, very bitter substance; from the dried leaves a little less and deeper yellow.

Menyanthes trifoliata, (leaves, August), yielded 0·45 grm. menyanthin; from the dried leaves uncrystallizable.

Marrubium vulgare, (leaves and tops, June), yielded 0·70 crystallized marrubiin; from the dried, about one half.

Tanacetum vulgare, (flowers, July). Bitter principle, darker from the dried.

Absinthium vulgare, (leaves and tops, cultivated, July). The dried yields less aromatic preparations and an extract-like, bitter principle.

Ergot, (July). Carefully dried and powdered, it was divided into two parts, one of which was kept under alcohol in a well filled bottle, the other kept dry in a paper box for ten months, after which time it was macerated for fifteen days in the same quantity of alcohol. The two portions were then treated exactly alike. The ergot was exhausted with alcohol in a displacement apparatus, the tincture evaporated in a water-bath and finally over sulphuric acid. The extract was treated with distilled water, and the filtrate concentrated at the ordinary temperature over sulphuric acid.

The extracts, exhausted by water (loss about one-fourth,) yielded to ether about five-sixths of their weight, and the residue, about one-eighth of the alcoholic extract, was a red granular powder—Wiggers' ergotin. The etherial solution, on evaporation, yielded fixed oil and crystallized cholesterin. The fixed oil, from the old ergot, was orange red, that from the fresh (kept under alcohol) was thinner and orange yellow. No other difference was thus far observed.

The concentrated aqueous solution of the alcoholic extract had

separated more of Wiggers' ergotin and crystals of mycose; the clear liquid was evaporated as before to near dryness, (the residue of the fresh was more granular) and, since pure ether was without effect, treated with alcoholic ether, which on evaporation yielded yellow acicular crystals, regarded as pure Bonjean's ergotin, (0·25 per cent. from the fresh, 0·20 from the old). The extract treated with alcoholic ether was entirely soluble in absolute alcohol except a little mycose; on spontaneous evaporation a little more mycose was separated, and then a reddish (rather darker from old ergot) oily mass was left, consisting mainly of lactic acid.

Rhus radicans, (leaves, July). The distillate from the dried leaves was without odor and acid reaction, and did not reduce the salts of silver, platinum and gold.

Ruta graveolens, (leaves, July). The tincture of the fresh leaves deprived of the alcohol by distillation separated an odorous green oil, which, removed by ether, left a yellowish granular glucoside of a bitter, somewhat acrid taste. From the dried leaves the oil was not obtained, and the glucoside merely as a brown extract.

Valeriana officinalis, (root collected in September, from high dry situations). The resin of the dried root is more acrid than in the fresh. 250 grm. of the former yielded 1 grm. valerianic acid. The distillate from the fresh root was neutral, had a slight odor, but on exposure to the air in the presence of alkalies, yielded 1·5 valerianic acid.

Prunus lauro-cerasus, (leaves, June). Lose all their virtues by drying.

Bryonia dioica, (root, October). Results alike from the fresh and dried.

Inula Helenium, (root of second years growth, October). The constituents are somewhat altered. The sugar is obtained from the fresh root in white hexagonal prisms, from the dried root granular.

Saponaria officinalis, (root, October). The saponin from the fresh root is white granular, from the dried amorphous colored.

Juniperus Sabina, (leaves and tops, July). The dried yields a browner, less odorous, more acrid tincture.

Aspidium Filix mas, (rhizome, September). The tincture of the dried browner and more acrid, but weaker in odor than from the fresh. The distillate from the latter has a disagreeable odor and taste, reduces the salts of the noble metals, and evaporated with potassa, leaves a soap-like residue,—properties which are not observed in the distillate of the tincture from the dried rhizome.

His experiments lead the author to the following conclusions:

1. Dried plants never represent entirely the fresh. The generation of valuable constituents during the drying process, as valerianic acid in valerian, must be regarded as exceptional.

2. The alterations produced in drying consist in the volatilization of a portion of the volatile constituents and in the oxidation of most of the fixed and the remaining volatile constituents. During the drying process the water in the cells is partly replaced by air, the influence of which upon the remaining constituents is intensified by the porosity of the dry plant.

3. It is always advantageous to use fresh plants for the preparation of alkaloids and other active principles, and to employ as low a temperature as possible.

4. The composition of the fresh plants is more simple than is frequently supposed; they generally contain, besides cellulose, the saccharine, starchy and albuminous principles and the mineral salts, a volatile principle, either a carbohydrogen or aldehyde; a bitter or acrid principle, which is either an alkaloid or glucoside; a coloring principle and often fat.

5. To reduce the injurious influence of the atmosphere, it appears advisable to hasten the drying and then compress the dry plants, as is the custom in North America. J. M. M.

ON A NEW FALSIFICATION OF SAFFRON.

By M. Amedee Blachez.

The author finds this saffron in French commerce. At first view it appears all right, has a good color, a well marked odor, contains no mixture of carthamus or marigold, and pressure on paper does not indicate an excess of moisture.

Its density is considerable, but it contains neither lead nor

sand. The fraud consists in carbonate of lime, or chalk, colored with some organic coloring matter, which is duller than that of saffron, and aids in preventing its ready detection by the eye.

The author supposes the adulteration to be formed into a paste, probably with honey, by which it is fixed on the surface of the stigmas, sometimes singly and sometimes coherent in bundles of five or six filaments.

When kept very dry portions of the paste separate and are detectable. Of three samples, obtained from different druggists, M. Blachez has found from 12·5 to 16 per cent. of carbonate of lime, which, in connection with the vehicle and moisture, make probably 20 per cent. in all.

The chalk is easily washed out, precipitates to the bottom of the macerating vessel, and can readily be recognized by its effervescence with muriatic acid and its reaction with oxalic acid.

Jour. de Phar., Avril, 1869.

ON SACCHARATED OXIDE OF IRON.

By S. Siebert, of Gottingen.

Two parts of iron are dissolved in 24 parts of nitric acid, of specific gravity 1·2; the filtrate is evaporated to 15 parts; when quite cool 12 parts of sugar are dissolved in the liquid, and an excess of a solution of 12 parts of sugar in 12 parts of 20 per cent. water of ammonia is added.*

The mixture is dark brown, at first gelatinous, but after agitation becomes thinner and clearer, and contains then, besides nitrate of ammonia and an excess of sugar, the combination of sugar with ferric oxide. This compound is precipitated by mixing, after 24 hours, the clear liquid with 4 or 5 times its volume of strong alcohol. The yellowish brown, flocculent, not very voluminous precipitate is collected upon a filter, washed with

* If the sugar was dissolved in the warm iron solution oxalic acid would be formed, which would afterwards be precipitated by the alcohol as oxalate of ammonia, and render the preparation poisonous. Instead of 20 per cent. water of ammonia, which during the solution of the sugar would lose much gas, it appears advisable to dissolve the sugar at a low temperature in the officinal 10 per cent. water of ammonia—Wittstein.

alcohol, pressed between bibulous paper, and the still moist mass intimately mixed with its own weight of powdered sugar, and dried by a moderate heat, when some ammonia is evolved, probably from the decomposition by drying of a precipitated compound of ammonia with sugar. The dry, inodorous mass may be triturated with water to a syrup, again precipitated by alcohol, the precipitate treated as before, well washed upon a filter with alcohol, pressed between bibulous paper, dried at ordinary temperature, and rubbed to powder.

Thus prepared it forms a dark brown inodorous and tasteless powder, readily soluble in water and diluted alcohol; the solutions are precipitated by alcohol, the latter also by ether. On prolonged standing, and at once by boiling, the whole quantity of iron is precipitated as an insoluble compound with sugar; the alcoholic solution is more stable. The aqueous solution is not altered by ferrocyanide or sulphocyanide of potassium; tannin after some time produces a precipitate; sulphhydric acid and sulphide of ammonium precipitate the iron, from very dilute solutions slowly. Alkalies and neutral salts do not decompose the compound, which, however, is separated from its aqueous solution by their halogen compounds. Even weak acids produce decomposition, and ferrocyanide of potassium separates then, gradually, Prussian blue. On heating, the compound loses water, and with it its solubility. Analysis leads to the formula, $C_{12}\ H_9\ O_9 + 2Fe_2\ O_3\ 6HO$, which requires 43·59 $Fe_2\ O_3$.

For pharmaceutical purposes the product obtained from the first precipitation with alcohol, mixing with sugar and drying is used. It has the same chemical properties as the pure compound, but differs from it by a lighter color and a sweet taste. It contains 10 per cent. metallic iron, = 14·28 $Fe_2\ O_3$. The author calls it Ferrum oxydatum saccharatum.

By dissolving this preparation in little water, and mixing it with simple syrup, a syrupus ferri oxydati may be made, of any desired strength. It has a fine red brown color, is perfectly clear, and has a purely sweet taste. It may be aromatized by orange flower water, &c. The dry preparation may well be used in mixtures.

The alcohol is recovered by distillation; to remove the ammo-

nia, the latter is to be previously neutralized by an acid— *Wittst. Viert. Schr.* 1869, 112—114. *From Pharm. Centralhalle*, 1867, *W.* 41.

ON HYDRATED OXIDE OF IRON SOLUBLE IN SUGAR SYRUP AND IN GLYCERIN.

By Dr. H. Kœhler and Dr. H. Hornemann.

Fleischer's capsules of saccharate of iron, and Wagner's and Grossinger's ferrum oxid. dialysatum, consist mainly of a very basic oxychloride of iron, have a styptic taste, blacken the teeth and change partly into a gelatinous condition. Without knowing of Siebert's method, the process of the authors is similar, but differs in the use of ferric chloride and caustic soda instead of the nitrate and caustic ammonia; both processes are still expensive, the former owing to considerable loss of alcohol.

Equal weights of ferrum sesquichloratum solutum* and simple syrup are mixed, hydrated soda is then added until the precipitate is entirely redissolved, the filtrate is mixed with a large quantity of distilled water and boiled for some time. The presence of the neutral salt Na Cl is sufficient to precipitate the hydrated oxide of iron in its soluble modification; the precipitate is collected upon a filter, washed until the filtrate ceases to precipitate silver salts, dissolved with powdered sugar, the solution evaporated to dryness by means of a water bath, and the residue reduced to powder.

Thus prepared it has the following properties:

1. It yields with water a yellowish brown, perfectly transparent, chemically indifferent solution, entirely free from styptic taste, and not precipitated by dilution with water or by boiling.

2. Phosphates, carbonates, benzoates, succinates, tannates, sulphocyanides, ferrocyanides and arseniates of alkalies have no effect on the solution; precipitates are produced by sulphide of ammonium and tincture of galls.

3. An aqueous solution of bibasic phosphate of soda does not produce a precipitate in the cold or on boiling.

* The preparation of the Prussian Pharmacopœia contains 15 per cent. Fe.

4. A minute quantity of a neutral salt added to the concentrated solution separates gradually the entire quantity of the hydrated ferric oxide; the same effect is instantly produced by diluting and boiling the mixture.

5. Organic or mineral acids transform this modification of the oxide into the ordinary kind, the solution becomes lighter in color, and is then affected by the usual reagents.

6. Bitter principles, like salicin, cetrarin, &c., also digitalin and the vegetable alkaloids, particularly those of morphia, also small quantities of the volatile oils, separate the hydrated oxide in its soluble modification.

By triturating the freshly precipitated oxide in a mortar, to promote the evaporation of the water, and testing the solubility in syrup and glycerin, Hornemann found that the oxide was completely soluble therein when it contained 7·2, 7·03, and 6·6 equiv. of water, but did not yield a clear solution when it contained 5·8 equiv. . The authors conclude that this soluble oxide of iron contains 6 equiv. of water of hydration.

Regarding its therapeutical use, the authors state:

1. That it is resorbed is proven by its secretion through the kidneys.

2. After its use for several weeks, in the form of syrup containing 2 per cent. oxide, or as troches, coating of the tongue, blackening of the teeth and constipation are not observed; the preparation agrees well with chlorotic women, weakened by hemorrhage in abortion, with reconvalescents and weak children; if it should show a tendency to diarrhœa, it must be discontinued for some days.

3. The preparation may be given with fresh milk of an alkaline reaction, with arrowroot, soups of meal and extract of beef, beef tea, coffee and chocolate, the taste of which is not affected.

4. All kinds of wine may serve as vehicles; it may be added to the infusion of bitter remedies like gentian, juglans, quassia, menyanthes and colombo, or united with their extracts; with cinchona it can only be given in the forms of pills.

5. Cold infusions of orange peel and cinnamon may serve as vehicles; with other aromatics it can only be given in the form of powder.

6. It does not possess any astringent properties and cannot be given with infusions of remedies containing tannin.

7. With resolvents and hepatic remedies (aloes, gall, taraxacum, carduus bened., &c.) it can only be given in pilular form, and with solution of iodide of potassium only by taking the iron syrup afterwards.

8. It must take the place of all other iron preparations as an antidote to arsenic. Rabbits were given 0·1345 grm. As O_3, and afterwards, in intervals of 10 minutes, four doses of 2 grm. saccharated oxide of iron; they fed again 18 hours afterwards. When poisoned the quantity of urine was very small, and it contained albumen; after 18 hours the secretion of urine was regular, and both arsenic and iron were found in it.

Halle, July 15th, 1868.

—*Buchner's N. Repert.*, 1869, 36—42. *From Berlin. Klinische Wochenschr.*

LIQUID SULPHUROUS ANHYDRIDE.

By M. Sestini.

M. Sestini (Bull. de la Soc. Chem.) has published some researches on liquid anhydrous sulphurous acid as a solvent.

If three decigrams of white phosphorus is put in contact with three cubic centimetres of this acid, it diminishes in volume gradually and the liquid assumes a light yellow color. When the sealed tube is put in the dark neither the liquid nor the phosphorus are luminous. After some days, having opened the tube, the liquid becomes again phosphorescent in the dark and leaves, on evaporation, a small residue of white phosphorus.

Iodine is slightly dissolved, causing a reddish yellow color.

Bromine dissolves in sulphurous acid; sulphur, on the contrary, is very little soluble in this liquid.

If a few drops of anhydrous sulphurous acid are thrown into a tube containing normal nitric acid a white crystalline product is obtained, as in the lead chambers, and disengages nitrous vapors.

A mixture of one volume of sulphurous acid with three volumes of bisulphide of carbon by prolonged contact (20 to 25 days) became a homogeneous liquid.

Benzine, ether and chloroform dissolve anhydrous sulphurous acid; the two first afford yellow solutions.—*Jour. de Pharmacie, Mai*, 1869.

THE ACTION OF LIGHT ON CITRATE OF IRON AND QUININE.

By C. H. Wood, F. C. S.

I was engaged about two years ago in preparing some citrate of iron and quinine, and by scaling my product in a hot cupboard I obtained good sized scales—bright, of a golden green color, and perfectly soluble in water. Remembering, however, that potassio-tartrate of iron gives far better scales when scaled in the sun's rays, than by any artificial heat (a fact I learnt from Mr. Braithwaite), I spread some of my solution on plates of glass, and exposed them in a window to an April sun. I was soon surprised, however, to observe the citrate becoming darker in color and exhibiting a very good photographic image of some bottles which cast their shadows on the plates. After a time, but while still wet, it gradually became opaque, as if the quinine had been precipitated. It ultimately came off in minute brownish colored powdery scales. The two results from the same solution were as different as they possibly could be. The sun-scaled specimen when put into water became white and opaque, and only dissolved after the lapse of a long time. The scales produced by heat, when thrown on water, rapidly melted, retaining their perfect transparency to the last. The salt contained 17 per cent. of quinia.

I then thought it would be worth while to ascertain whether the strong solution only is subject to this change, or whether the finished product would be also affected in like manner by exposure to light. About a drachm of the good citrate, scaled by heat and dissolving freely without opacity, was therefore spread out on a sheet of white paper and laid in the sun's rays. After a quarter of an hour's exposure, it was perceptibly deepened in color. In twenty minutes it had become brownish, and when put into water became at once white and opaque. The white spongy bits floated about in the liquid, and gradually but slowly dissolved. Some samples of citrate of iron and quinine were then obtained from

several different makers, and exposed in the same manner. All were more or less similarly affected, but nevertheless the results varied considerably. In some cases the salt was even more decidedly affected than my own had been; but in others the result was less injurious, and when the scales, after insolation, were treated with water, although they became white and opaque, their ultimate solution took place readily. Portions of these exposed specimens were wrapped up and put away in a dark place for some time; upon subsequently examining them, they had to a great extent passed back to their original condition. It has often happened that samples of this salt have been disparaged on account of their difficult solubility; from these results, however, it would appear possible that this defect has not been so much due to any fault in the manufacture as to some accidental circumstance in the preservation of the product. Should time and opportunity offer, I hope on some future occasion to investigate more fully the nature of the change which thus occurs in citrate of iron and quinine by exposure to light.—*Pharm. Jour., Lond., May*, 1869.

THE SOLUBILITY AND ESTIMATION OF QUININE.

M. Fausto Sestini (Bulletin de la Société Chimique, Février, 1869) has made some new determinations of the solubility of quinia in pure water. He finds that one part of quinia requires 1667 parts of water at 20 C., and 902 parts at 100 C. for its solution. One part of the hydrate of quinia (with $3\mathbf{H}_2\mathbf{O}$) requires 1428 parts at 20°, and 773·4 at 100° C. The alkalies diminish the solubility of quinia, and soda to a greater extent than potash; a ley containing one-sixth of soda dissolving none. The author has analysed several arseniates of quinia, in which he estimated the alkaloid by the following method: The salt is dissolved in water acidulated with sulphuric acid, and the quinia precipitated by a solution of carbonate of soda; the liquor is evaporated to dryness without filtering, the residue treated with water, the quinia collected on a filter, washed until the filtrate ceases to react with nitrate of silver, and then dried at 100 C., and weighed. The filtered liquor and washings are eva-

porated to dryness, and the residue treated with alcohol, to remove the quinia present. The alcoholic liquid is evaporated, dried at 100 C., weighed, and then calcined to deduct the inorganic matter taken up by the spirit.

When a sulphuric solution of quinia is precipitated by ammonia or soda, the precipitate must be washed until the washings cease to affect chloride of barium, because some subsulphate of quinia is always thrown down with the precipitate. To recover the quinia dissolved by washing, the liquors are evaporated to dryness and the residue treated with alcohol. M. Sestini gives the following formulæ for the arseniates of quinia analysed by him:

$$2\,(C_{20}\,H_{24}\,N_2\,O_2)\,As\,O_4\,H_3 + 8H_2\,O.$$
$$2\,(C_{20}\,H_{24}\,N_2\,O_2)\,As\,O_4\,H_3 + 6H_2\,O.$$
$$C_{20}\,H_{24}\,N_2\,O_2\,As\,O_4\,H_3 + 2H_2\,O.$$

—*Pharm. Journ., London, May*, 1869.

ON THE COLORING PRINCIPLES OF BUCKTHORN BERRIES.

By W. Stein.

The author used for his experiments olive green berries. After having removed the fat, by boiling with petroleum ether,* a portion was exhausted with water and alcohol, and the liquids precipitated by acetate of lead, &c. Another portion was exhausted by 80 per cent. alcohol, water and ether. Thus the author succeeded to obtain a pure coloring principle soluble in water (rhamnin), one insoluble in water (rhamnetin), a principle precipitated by gelatin (rhamnotannin), a nitrogenous compound (rhamnin ferment), and a gum (rhamnin gum).

Rhamnin is contained in the aqueous infusion besides gum and tannin; the gum is first precipitated by alcohol, after which ether separates the coloring matter in yellow floccules, which, washed with ether and dried in vacuo, constitute a yellow mass in a spongy condition like tannin. The floccules liquify very readily before they are dry, and leave then, on evaporation, a gum-like mass. If an alcoholic solution of rhamnin is evapo-

* The so-called benzine of American commerce.

rated spontaneously, or mixed with some ether, microscopic yellow needles are obtained. Rhamnin has but little taste; it dissolves in water, alcohol, and acetic acid, sparingly in absolute alcohol, scarcely in ether and chloroform. The golden yellow color of the aqueous solution changes, on exposure, to brown. The cold solution is not affected by the acetates of copper, lead, zinc or alumina, the chlorides of tin and mercury, nitrate of silver, gelatin, caustic baryta, sulphate of soda and chloride of sodium. Ferric chloride colors the solution olive green, nitroprusside of sodium, deep brown red; chlorinated lime, dark green. The alcoholic solution is precipitated by lead salts.

Dilute sulphuric acid and the above mentioned ferment split rhamnin into rhamnetin and a gum-like body which reduces alkaline solutions of cupric oxide. Cloth upon which alum or tin-salt had been used as a mordant were not dyed by solution of rhamnin; an intense color was, however, produced after the addition of a little rhamnin ferment. Brown buckthorn berries, which contain much rhamnin, may be used with advantage for dyeing by the addition of an infusion of the olive green fruit. The author could not, by boiling, convert the insoluble rhamnetin into the soluble rhamnin, as the statement of Kane seems to indicate.

It is difficult to free the rhamnin from the last traces of a nitrogenous compound. On analysis the author obtained results indicating a composition similar to that of ruberythrinic acid and of quercitrin.—*Zeitschr. f. Chemie*, 1869, 183, 184, *from Journ. f. prakt. Chem.* cv, 97.

ACID PROOF CEMENT.

Mr. Editor:—Thinking that the following suggestion may be of use to or improved upon by some of the readers of the *Journal of the Franklin Institute*, I offer it with these ideas for what it may be worth. It frequently happens that the chemist requires some means for protecting cork from the destructive action of vapors such as arise from boiling nitric acid. I think that the plan here mentioned may possibly meet this requirement. Finding it necessary to connect a glass tube with a wide-mouthed

flask, and in so doing to use a cork which was exposed to the action of the fumes from boiling nitric acid for several hours, I found the best preservative to consist of a coating of silicate of soda and powdered glass. The cork having been bored to suit the size of the tube, was soaked for two or three hours in a solution of silicate of soda, consisting of one part of commercial concentrated solution, to three parts of water. The tube was next inserted, and when dry, the cork was covered with a paste made by mixing the condensed solution of the silicate with powdered glass in such proportion as to form a mass of about the same consistence as that of putty. This is spread on the under surface, and then washed with a solution of chloride of calcium. It soon hardens, so I think it advisable to make the connection with the flask whilst the paste is in a plastic state, and to allow it to become solid before applying heat to the vessel containing the acid.

Corks protected in this manner were but slightly acted upon, though remaining over the boiling nitric acid more than four hours, and over hot acid for ten. In some instances, when not entirely covered, the vapor softened the cork beneath the silicate to the depth of about a quarter of an inch, but the cement proved sufficiently strong to form a compact diaphragm, enabling the tube to be removed from the flask without danger of the fluid contained being contaminated. I would suggest also the application of this cement as a luting for chemical apparatus for general use, as I find that it remains unaffected even when immersed in strong nitric, sulphur, or muriatic acids. The immersion in these liquids was made whilst the plaster was still soft, with the only perceptible effect of hardening the same immediately. Yours, &c., ROB'T. F. FAIRTHORNE.

PHILADELPHIA, March 22d, 1869.

—*Jour. Franklin Institute, April*, 1869.

ARTESIAN WATER OF CHARLESTON, S. C.

BY PROF. C. U. SHEPARD, JR.

The analysis of the water of the artesian well of this city may interest some readers, not only the scientific who may possibly

draw important inferences from a knowledge of its composition, since it comes up from below the layer of phosphatic nodules (sixty feet from the surface), but also travellers and health-seekers, who every season drink at this agreeable well, which is also quite popular among our citizens.

The following analysis is the average of several, completed at intervals of a few weeks during last winter and spring. Slight, but unmistakable, changes were noticed in the proportions of some of the ingredients during these investigations. There are two wells; only one, however, is completed. This, the old one, is about 1250 feet deep. The temperature of the water at the spout is 87° F. (or 30·7° C). Specific gravity (taken at 15° C.), is 1·0015. The amount of solid ingredients in the water= 0·228—0·234 per cent.

In 100 parts solid ingredients:

Bicarbonate of soda	52·749
Chlorid of sodium	47·051
Bicarbonate of lime	0·0883
Bicarbonate of magnesia	0·01375
Silica	0·00102
Phosphates of lime, iron and alumina	0·0004
Organic matter	0·0017
Sulphuric acid in traces.	

In 100 parts well water—

Bicarbonate of soda	0·1435
Chlorid of sodium	0·128
Bicarbonate of lime	0·000273
Bicarbonate of magnesia	0·0000323
Silica	0·0000238
Phosphate of lime, iron and alumina	0·0000093
Organic matter	0·0000467
Free carbonic acid	0·0018
	0·27366

In 100 imperial gallons (at 15° C.), are contained about one and a half pounds bicarbonate of soda and one and a quarter pounds common salt.

CHARLESTON, S. C., Jan. 21, 1869.

—*Am. Jour. Sciences and Arts May*, 1869.

REDUCTION OF OXIDES BY HYDROGEN.

M. W. Müller has instituted a series of experiments with the view to determine precisely the temperature at which the oxides of metals begin to be reduced by hydrogen gas. He has experimented with oxides of various metals prepared in various ways, and also determined the effect of other gases, nitrogen, and aqueous vapor, upon the temperature of incipient reduction. Oxide of iron prepared by cautiously heating metallic iron in contact with air was found to get reduced at 285° C.; the same oxide prepared from nitrate of iron was reduced at 286°; when rather moist hydrogen was applied and the oxide of iron prepared from oxalate of the protoxide, the temperature of reduction was found to be 278°. Oxide of copper prepared from the sulphate of that metal and precipitated by caustic soda, and previously heated to 300°, was found to become reduced at 135°; strongly ignited oxide of copper became reduced at 142° on an average of five experiments; oxide of cobalt becomes reduced at about 332°; oxide of zinc could not be reduced at a temperature whereby glass became fused; oxide of tin, about 174°; oxide of lead, at from 310° to 315°; peroxide of mercury, 230°; oxide of silver, at between 73° and 78°. The experiments have been extended to the chlorides and sulphides of some metals. Chloride of gold does not appear to be acted upon below 200°, but at a higher temperature an explosion took place. The action with chloride of platinum was rather strong at 85°, and rather violent at 165°; reduction of the metal took place. The chlorides of silver and lead are not reduced below the boiling point of mercury, but requires a red heat; sulphide of gold is reduced at 200°, while sulphide of platinum is reduced at the ordinary temperature, sulphuretted hydrogen gas being formed in both cases.—*Lond. Chem. News, April* 9, 1869, *from Poggendorff's Annalen*, vol. 136, part i, 1869.

QUANTITATIVE ESTIMATION OF TARTARIC ACID.

Dr. Martenson, First Assistant in the Chemical Laboratory of the Pharmaceutical Institute of Dorpat, Russia, has made a series of experiments, with the view to obtain a trustworthy

and readily executed method of quantitative estimation of tartaric acid. After first ascertaining by a series of experiments that tartrate of lime is less soluble in water than is commonly reported in books (he ascertained that 1 part of the aforesaid salt requires at 18° C. 2388·26 parts of water for complete solution), he discovered the almost complete insolubility of the tartrate of lime in alcohol of 85 per cent. strength. In order to estimate the tartaric acid in tartrate of potash, for instance, the salt is dried at 100° C., dissolved in a small quantity of distilled water, next pure chloride of calcium solution is added, with the precaution to avoid excess thereof, afterwards a few drops of lime-water are added, and the porcelain capsule wherein this operation is performed is left standing for some hours. A crystalline precipitate is thus obtained; it is collected on a filter previously dried at 100° and weighed; the supernatant fluid is first poured upon the filter, then the precipitate is collected and washed with strong alcohol, the precipitate and filter are thoroughly dried at 100°; the precipitate is weighed as—

$$2CaO,C_8H_4O_{10}+8HO.$$

It is of importance to take care to use a porcelain basin, the glaze of which is quite free from cracks, otherwise the precipitate has a strong tendency to adhere to such portions of the basin. When either hydrochloric or nitric acids are present along with tartaric the fluid is first nearly neutralised with pure carbonate of lime and warmed to expel carbonic acid, while the last traces of acid are removed with lime-water. The presence of either chloride of ammonium or chloride of calcium in excess interferes with the correctness of the results and makes it necessary to add alcohol to the liquid to be operated upon. Results are accurate when proper care is taken.—*Lond. Chem. News, April* 9, 1869, *from Pharm. Zeitschr. f. Russ.*, 1869, No. 1.

SALT DEPOSIT NEAR BERLIN.

According to M. Jahn, a stratum of rock salt, 669 feet thick, has been discovered near Berlin, at Sperenburg, and from the borings is considered a highly valuable mineral deposit.—*Ibid.*, *from Ibid.*

ON FRACTIONAL PERCOLATION.

By C. Lewis Diehl.

The recent papers of Dr. E. R. Squibb *on the Pharmacy of the Cinchonas* and *on Repercolation*, induced me to experiment upon *senna* and *rhubarb*, with a view to the preparation of fluid extracts from them, without the aid of heat. For several reasons I have been unable to conclude my experiments; but during their execution some ideas suggested themselves, which may be of interest to pharmacists, and are, therefore, offered for publication.

The adoption of fluid extracts by the revisors of our pharmacopœia has opened a large and instructive field to the pharmacist. From the beginning of their introduction the pharmaceutic mind has been agitated with plans for their production in such state that they should accurately represent a normal quantity of material. How far this has been accomplished it is difficult to say, as there have been but few attempts made to determine their absolute strength. The subject of heat, in its influence on this class of preparations, early attracted attention, and has been conceded to influence their character decidedly, and in many cases injuriously. Even when not directly injurious to any active proximate constituent of the drug, its application may become indirectly injurious, by rendering an inert principle insoluble, thereby causing some of the active matter to be precipitated with it mechanically; or by the evaporation of a hydro-alcoholic percolate, for the purpose of concentration, so to alter the relation of the alcohol to water as to render it incapable of holding some of the valuable constituents in solution. These difficulties were in part avoided by the manipulation suggested by Prof. Graham in 1858, and subsequently by Prof. Procter in his report as a member of the Pharmacopœia Committee of the American Pharmaceutical Association. The improvement of Prof. Graham consisted in reserving the first and concentrated portions of the percolate, and evaporating the remainder to such measure that, when mixed with the reserved portion, the required quantity of fluid extract was formed. On this plan most of the formulas for the fluid extracts of our Pharmacopœia were constructed, and

they have proved reliable, as far as we are enabled to judge without actual analysis of the resulting preparations. Yet several objections to the process exist; the first being the one mentioned above with regard to the concentration of hydro-alcoholic percolates; the next, and most important one is, that, if a fluid extract is at all liable to be injured by heat, a portion at least is sacrificed, and we cannot obtain an absolute representative of a normal quantity of the drug. Dr. Squibb, by his experiments upon the fluid extracts of colchicum seed and of buchu, is satisfied that, by even ordinary care in percolation, the first twelve fluidounces of percolate from sixteen troyounces of the drug, will contain *two-thirds* of the soluble matter contained therein, and that the remaining *one-third* of soluble matter is weight for weight less active than the first *two-thirds*. Granting this to be true of drugs in general, and that the deficiency of activity in the last *one-third* will bring its actual value to *one-fourth*, there still occurs a great loss, if the drug is readily altered by heating. This must, for instance, be true of fluid extract of senna, in the formula for which all due regard has been paid to the changeable nature of the active principle; but as the first pint of percolate does not contain all the active matter of the senna, it follows that, in evaporating the subsequent percolate, a portion of activity is sacrificed, and that therefore a pint of fluid extract can not absolutely represent sixteen troy-ounces of senna. Similar objections pertain to the process for fluid extract of rhubarb. It was with a view to improving the process for these preparations, that I availed myself of the valuable hints contained in the papers of Dr. Squibb, modifying his suggestions as appeared to me desirable. In explanation of the heading to this paper I will say that I regarded the term *fractional percolation* more to the point than *repercolation*, in designating a process depending upon the percolation of *fractional portions* of a drug by one and the same menstruum.

Experiment 1.—Twenty-four troyounces of Alexandria senna in moderately fine powder was divided into portions of ten, eight and six ounces. The *first portion* (of ten ounces) was moistened with five fluidounces of diluted alcohol, and, after standing a short time, packed appropriately in a glass funnel, the surface covered with a disk of filtering paper, and sufficient diluted alcohol poured on, as required. At the expiration of about

three hours the percolate began to pass at the rate of thirty drops to the minute, and gradually faster, until towards the end of the process it passed at the rate of about eighty drops to the minute. The percolate was collected in the following fractions:

First fraction—	7·5	f. ounces—	designated	Reserve A.
Second "	6·	"	"	Percolate No. 1 A.
Third "	10·5	"	"	" " 2 A.
Fourth "	31·	"	"	Exhaust percolate A.

The *second portion* (of eight ounces) was moistened with part of *percolate No.* 1 *A*, packed as above, the remainder of the percolate poured on, and as soon as absorbed, followed by *percolate No.* 2 *A*, and this by diluted alcohol. The percolate was collected in the following fractions:

First fraction—	6	f. ounces—	designated	Reserve B.
Second "	4	"	"	Percolate No. 1 B.
Third "	6·5	"	"	" " 2 B.
Fourth "	27.	"	"	Exhaust percolate B.

The *third portion* (of six ounces) was now treated with *percolates No.* 1 *B*, and *No.* 2 *B*, and diluted alcohol in the same manner as the second portion, and the percolates collected in the following fractions:

First fraction—	10·5	f. ounces—	designated	Reserve C.
Second "	22·	"	"	Exhaust percolate C.

The *reserve portions* A, B and C were now mixed in an accurately tared flask, and after ascertaining the weight of the finished fluid extract, a fractional portion was evaporated as near to dryness as possible, in order to determine the amount of solid matter contained. The *exhaust percolates* A, B and C were also mixed and a fractional portion evaporated to dryness. The following is the result:

Amount of solid extract—

In 24 f. ounces of fluid extract	2,880	grains.
In 1 f. ounce " "	120	grains.
In exhaust percolates for 24 f. ounces of fluid extract	432	grains.
In exhaust percolates for 1 f. ounce of fluid extract	18	grains.
From 1 troy ounce of Alexander senna,	138	grains.

Experiment 2.—Twenty-four troyounces of the same lot of powdered Alexandria senna were exhausted according to the Pharmacopœia directions and three percolates obtained, as follows:

First fraction—	24	f. ounces—	designated	Reserve.
Second "	48	"	"	Additional percolate.
Third "	105	"	"	Exhaust "

Fractional portions of each of these percolates were evaporated with the following results:

Amount of solid extract—

In reserve for 24 f. ounces of fluid extract	2,304	grains.

In reserve for 1 f. ounce of fluid extract,		96 grains
In additional percolate for 24 f. ounces of fluid extract	886 grains.	
In additional percolate for 1 f. ounce of fluid extract		37 grains.
In 1 fluid ounce of finished fluid extract		133 grains.
In exhaust percolate for 24 f. ounces of fluid extract,	168 grains.	
In exhaust percolate, for 1 f. ounce of fluid extract		7 grains.
From 1 troy ounce of Alexandria senna		140 grains.

Summing up the results of the foregoing experiments it will be found that the fluid extract made by fractional percolation contains thirteen grains less of solid matter, in a fluidounce, than the officinal fluid extract, but on the other hand it contains one hundred and twenty grains of solid matter, that is not heated, while the officinal fluid extract contains but ninety-six grains.

Experiment 3.—Twenty-four troy ounces of India senna, in moderately fine powder, was treated by fractional percolation in precisely the same manner as indicated in Experiment 1, with the following result:

Amount of solid extract—		
In 24 f. ounces of fluid extract	3,072 grains.	
In 1 f. ounce " "		128 grains.
In exhaust percolate for 24 f. ounces of fluid extract	520 grains.	
In exhaust percolate for 1 f. ounce of fluid extract		21·5 grains.
From 1 troy ounce of India senna		149·5

Experiment 4.—A repetition of Experiment 2, substituting India for Alexandria senna, gave the following result:

Amount of solid extract—		
In reserve for 24 f. ounces of fluid extract	2,400 grains.	
In " " 1 f. ounce " "		100 grains.
In additional percolate for 24 f. ounces of fluid extract	1,044 grains.	
In additional percolate for 1 f. ounce of fluid extract		43·5 grains
In 1 fluid ounce of finished fluid extract		14·35 grains.
In exhaust percolate for 24 f. ounces of fluid extract	174 grains.	
In exhaust percolate for 1 f. ounce of fluid extract		7·25 grains.
From 1 troy ounce of India senna		150·75 grains.

The results of the last two experiments correspond practically with Experiments 1 and 2. While the fluid extract, made by

fractional percolation, contains fifteen grains less of solid matter, the officinal preparation contains but one hundred grains of solid matter in the fluidounce not heated; whereas the former contains one hundred and twenty-eight grains. Fractional percolation appears therefore to be well adapted to the preparation of fluid extract of senna, unless we take the ground that that portion of senna, which is subjected to heating, is not injured thereby.

A series of experiments with rhubarb was next undertaken, but unfortunately I was unable to complete them, and had to content myself with the two following:

Experiment 5.—Twenty-four troy ounces of rhubarb, in moderately fine powder, was treated with diluted alcohol by fractional percolation, precisely like the senna in Experiments 1 and 3, with the following results:

Amount of solid extract—		
In 24 f. ounces of fluid extract	3,432 grains.	
In 1 f. ounce " "		143 grains.
In exhaust percolate for 24 f. ounces of fluid extract	2,058 grains.	
In exhaust percolate for 1 f. ounce of fluid extract		85·75 grains.
From 1 troy ounce of rhubarb		228·75 grains.

Experiment 6.—Twenty-four troyounces of the same lot of rhubarb, treated according to the Pharmacopœia process, with alcohol, followed by diluted alcohol gave the following results:

Amount of solid extract—		
In reserve for 24 f. ounces of fluid extract	3,618 grains.	
In " " 1 f. ounce " "		150·75 grains.
In additional percolate for 24 f. ounces of fluid extract	2,364 grains.	
In additional percolate for 1 f. ounce of fluid extract		98·50 grains.
In 1 fluid ounce of finished fluid extract		249·25 grains.
In exhaust percolate for 24 f. ounces of fluid extract	84 grains.	
In exhaust percolate for 1 f. ounce of fluid extract		3·50 grains.
From one troyounce of rhubarb		252·75 grains.

The results of the last two experiments are exceedingly unfavorable, as regards fractional percolation upon rhubarb, as the reserve portion by the officinal process contained more solid extract than the fluid extract made by fractional percolation contained altogether. That a troy ounce of rhubarb yields more

solid extract by the officinal process than by fractional percolation, is owing to the fact that alcohol is used in the former, previous to the use of diluted alcohol, while in the latter, diluted alcohol alone was used. Had alcohol been used in fractional percolation previous to diluted alcohol, there is scarcely a doubt that the result would have been more favorable to fractional percolation; as the previous percolation with alcohol appears to enable the diluted alcohol to exercise its solvent power more adily.

With but limited experience in the matter, I feel confident that almost all drugs can be exhausted by the process of fractional percolation, "if the proper menstruum is selected; if the drug is properly comminuted; and if the operator possesses the necessary skill." The operator must be competent to judge of the proper fineness of the powder, and whether the same must be packed loose, or compact, or moderately compact. The process does not admit of failure during any of its stages, and requires the utmost care and observance of minutiæ and detail, when applied to the preparation of fluid extracts of the present strength. A very limited amount of menstruum must be used, and we, therefore, possess no margin to make up for any neglect or failure during any part of the process. But if we could use powders, as prescribed by the Pharmacopœia, for fluid extracts, and were unable to use for each fraction of powder as large a proportion (or more) of menstruum as is at present directed for these preparations, the process could be made universally applicable, with scarcely a chance for failure in the hands of even the moderately skilled.

This is possible if we reduce the strength of fluid extracts so that eight troyounces of drug shall be represented by one pint, and I see no good reason why this should not be done! We have the precedent in the fluid extract of *cinchona* and *wild cherry bark*, both of which are made of the above strength, and are yet sufficiently strong for all practical purposes. And is there any real necessity for the extreme concentration of this class of preparations? With but few exceptions, they are administered in doses of a fluiddrachm or less, and those that are given in larger doses could perhaps be so modified by the use of

appropriate menstruæ as to render them equally acceptable in more bulky doses. By adopting this strength a great number of substances could be made available in a concentrated form, which are now excluded on account of the deleterious effects of heat.

On looking over the formulæ for the fluid extracts of our Pharmacopœia it will be observed that in no instance (except perhaps fluid extract of ipecac) more than four fluidounces of percolate is directed to be obtained from one troyounce of drug. Taking this for a basis, I have framed the following general formula:

Take of the drug (in a powder of the requisite fineness,) 16 troyounces;
Of the menstruum, a sufficiency.

Divide the powder into portions of eight, five and three ounces; moisten the *first portion* (of eight ounces) with three fluid ounces of the menstruum, pack it carefully in a conical displacer, cover the surface with a disk of filtering paper, and pour on menstruum as required, observing that the surface always remains covered with it. Reserve the percolate, as it passes, in the following fractional portions:

First fraction—	8	fluidounces—	Reserve	A.
Second "	6	"	Percolate No. 1	A.
Third "	14	"	" " 2	A.
Fourth "	4	"	" " 3	A.

Proceed to moisten the *second portion* (of five ounces) with 2½ fluidounces of *percolate No.* 1 *A*, pack as above and pour on successively the remainder of *percolate No.* 1 *A*, followed by *percolates Nos.* 2 *A and* 3 *A*, and sufficient additional menstruum to produce the following fractions of percolate:

First fraction—	6	fluidounces—	Reserve	B.
Second "	4	"	Percolate No. 1	B.
Third "	10	"	" " 2	B.
Fourth "	4	"	" " 3	B.

Then moisten the *third portion* (of three ounces) with 1½ fluidounces of *percolate No.* 1 *B*, pack as above, and percolate with the *percolates B*, and additional menstruum, in the same succes-

cession as the *second portion* had been percolated *with the percolates A*. Finally obtain—

18 fluidounces of percolate . . . Reserve C.

and mix this with the *reserves A and B*, previously obtained.

By this process, from the first eight ounces of drug four fluid ounces of percolate are obtained for each troyounce of drug, while from the second portion of five ounces, nearly five fluidounces, and from the third portion of three ounces, six fluidounces of percolate are obtained for each troyounce of drug. It will also be observed that the reserved percolates are so divided as to insure the use of the weakest portion of each division last. It is, of course, necessary to pour on each fraction as soon as the one previously added is absorbed, but not before.

Whatever may be the merits of these suggestions in improving the present processes for fluid extracts, the above general process must be decidedly preferable to the present methods for exhausting drugs; although, on the other hand, it is too complicated to find favor with all. Apart from other considerations an economy of menstruum is effected, as under no circumstances more than three to three and one-half pints of menstruum need be used for sixteen troyounces of drug; for as soon as the first portion is exhausted it may be expressed, and the liquid so obtained used as so much additional menstruum for the second portion; and the same is true of the second portion with relation to the third. Finally all the exhausted material may, according to its alcoholic strength, be mixed with a suitable proportion of water, and expressed; and the liquid so obtained reserved in a suitable vessel until sufficient has accumulated to warrant the expense of distillation.

The practical uses to which these fluid extracts could be applied must be obvious to every one. Many *solid extracts* that are but seldom prescribed could be prepared from them in such quantities as might best suit their consumption. Most *tinctures*, *wines* and *syrups* might be prepared for them by processes, modified according to the nature of the drug or its menstruum. As regards the menstruum appropriate in each case, that must be regulated, not only by its solvent properties, but also by its power of preserving. It would perhaps not be impracticable to

introduce glycerin into the menstrua for some fluid extracts, especially for those that are prepared from astringent drugs.

If by the above remarks I have succeeded in interesting any of the numerous pharmacists of our country, I trust that they will find pleasure in experimenting upon a subject which, although so far mainly theory, I hope soon to be enabled to present in a more practical shape.

LOUISVILLE, *February*, 1869.

—*The Pharmacist, Chicago, March*, 1869.

TINCTURA IODINII DECOLORATA.

BY CHAS. O. CURTMAN, M. D.,
Prof. of Chemistry in the Missouri Medical College.

A colorless tincture of iodine for external application to the face, neck and hands, has so many obvious advantages over the common officinal compounds that various efforts have been made to obtain a reliable preparation, which, while it retains the valuable properties of the iodine, does away with its objectionable features. Most prominent among these objections are the unsightly stains inseparable from the use of the common tinctures. Different formulæ have been from time to time made public for accomplishing decoloration; some of them using alkaline sulphites, or hyposulphites, which convert the free iodine into an alkaline iodide, and have no preference over a simple solution of iodide of potassium or sodium. Others effect the discharge of the color by carbolic acid, which certainly gives good results, but may not always be considered a desirable addition; others again convert the free iodine of either the simple or compound tincture into ammonia compounds by the addition of aqua ammoniæ in various proportions, and this seems to me the method deserving preference over the others on account of the greater volatility of the resulting product, and its better adaptation to speedy absorption. The formulæ based upon the action of ammonia, however, differ widely in their proportions of iodine and of ammonia among themselves, and from the corresponding officinal preparations of the U. S. Pharmacopœia, and varying so much in strength they have, perhaps on that account, found less favor than they deserve.

Now, the Tinctura iodinii, U. S. P., contains 30 grains of iodine per ounce, all of it uncombined. The Tinctura Iodinii Composita, U. S. P., contains 38 grains of iodine, (15 grains of free iodine, and 23 grains of iodine combined with potassium). As the iodine in the colorless preparation does not exist in a free state, but in that of ammonia compounds, which acts somewhat less energetically than the free metalloid, the proportions of the compound tincture, 38 grains of iodine per ounce, are probably the best, and this would require about one and one quarter ounces per pint.

To exactly convert this amount of iodine into the colorless iodide of ammonium and iodate of ammonia, 309 minims (about five fluid-drachms) of Aqua Ammoniæ fortior U. S. P. (spec. grav. 0·900) per pint, or about 20 minims per ounce are requisite. The published formulæ give considerably more than that, some of them recommending half a pint; some only four fluid-ounces per pint of tincture, but all of them agree in using vastly more than theory requires, and thereby make the preparation objectionable on account of irritating ammonia vapor, which though it may prove very useful in many cases, should certainly not always be present; at least its addition should be left to extemporaneous prescription. On the other hand, the employment of only the theoretical quantity results in decoloration so slowly as to be practically and virtually inapplicable.

Experiments instituted to ascertain the least amount of ammonia by which the tincture could be rendered colorless in a reasonable space of time, gave the following results. Into nine vials the ingredients for the tincture were placed in varying proportions, thus:

	I	II	III	IV	V	VI	VII	VIII	IX
Iodine, grains	38	38	38	38	38	38	38	38	38
Alcohol f℥	8	7½	7	6½	6	5½	5	4½	4
Aqua Amm. fort. f℥		½	1	1½	2	2½	3	3½	4

No special precautions were taken in regard to the regulation of light or temperature. The iodine was completely dissolved in the alcohol before the addition of ammonia, which occasioned a copious dark precipitate, re-dissolving in a few hours. No. 1 was simply kept for comparison of color. Even during

the first few hours a slight decoloration appeared in every vial, but was most decided in No. 9, which bleached from day to day, and on the third day retained only a deep straw color, while the others had lost their color in strict proportion to the quantity of ammonia present—No. 2 being yet very dark, though considerably lighter than No. 1.

For complete decoloration, No. 9 required 5 days; No. 8, 8 days; No. 7, 11 days; No. 6, 15 days; No. 5, 21 days; No. 4, 27 days; No. 3, 37 days; No. 2, at the expiration of six weeks, still retained considerable color, being as dark as No. 8 on the second day.

From the above data the following working formula would appear most appropriate for general application:

	For 1 pint.	For 1℥.
Iodine,	1¼ oz.	38 grains.
Alcohol,	13 f. oz.	6½f℥
Aqua Ammon. fort.	3 f. oz.	1½f℥

Dissolve the iodine completely in the alcohol, then add the ammonia. This occasions at first a dark precipitate of iodide of nitrogen, which, however, soon re-dissolves and is entirely decomposed. Set aside for four weeks or until perfectly colorless. Occasional shaking up is advantageous. More ammonia would hasten the process of decoloration, but should be avoided. When pure materials are employed no filtration is necessary.

If, however, the presence of iodide of potassium should be deemed preferable, according to the proportions of the Tinctura Iodinii Composita, U. S. P, the amount of ammonia may be still farther reduced, as over half of the whole amount of iodine present is already in combination with potassium. The following experiment was made to ascertain the best proportions—four vials were filled with:

	No. 1.	No. 2.	No. 3.	No. 4.
Iodine, grains,	15	15	15	15
Iodide potassium, gr.	30	30	30	30
Alcohol, fluid-drachms,	7½	7	6½	6
Aqua Amm. fort. fluid-drachms,	½	1	1½	2

No. 4, lost color very quickly, and on the fourth day was only of a pale straw color; while No. 1 was yet very dark, though

much lighter than the tincture without ammonia; the intermediate numbers were also intermediate in color. For complete decoloration, No. 4 required 6 days; No. 3, 9 days; No. 2, 27 days; No. 1, 35 days. The proportions of No. 1, therefore, would be least objectionable on account of its small qnantity of ammonia, though requiring rather a long time for decoloration.

A modification of this process for a speedy preparation of colorless tincture of iodine without excess of ammonia has suggested itself to me, and upon trial given satisfactory results, though I would only recommend it in cases where the shortness of time forbids the employment of the other. This consists in speedily decolorizing the solution of iodine in alcohol by a surplus of ammonia, and, after decoloration, carefully adding hydrochloric acid until the reaction remains but feebly alkaline. The hydrochloric acid forms with the free ammonia chloride of ammonium, which, being but slightly soluble in alcobol, is nearly all precipitated in the form of a white crystalline powder, while the iodide of ammonium and iodate of ammonia remain in solution. An addition of even a slight excess of acid would destroy the preparation, restoring the color of the tincture, by decomposing the ammonia compounds of iodine; the precipitate can be readily removed by filtration. Very strong alcohol should be employed in this process, as the completeness of the precipitation of chloride of ammonium is in direct proportion to the strength of the alcohol. As some of the chloride of ammonium, however, remains in all cases, and more material is required to accomplish the same object, I should give the simpler process of slow decoloration by addition of a minimum of ammonia the preference.—*St. Louis Medical Reporter, June* 1*st*, 1869.

A NEW BELLADONNA PLASTER.

To the Editor of the Pharmaceutical Journal:

GENTLEMEN,—Your correspondent, Mr. Gissing, in the last number, asks for certain information relative to the extract of belladonna now in use for making the emplastrum belladonnæ of the British Pharmacopœia, which I am not able to give; but, as belladonna plaster has for some time occupied my attention,

it may, perhaps, interest Mr. Gissing, or other of your readers, to know how much better a plaster can be produced by the use of resinous extract of belladonna *root* than that made with the spirituous extract of the leaf.

Instead of the dark, nasty preparation of the Pharmacopœia, I obtain a beautiful plaster, somewhat resembling empl. cerat. sapon., which adheres very nicely, requiring no adhesive margin, neither does it run nor exude, so that it may be worn a month or longer without staining the linen or producing any discomfort whatever.

When this plaster is made with a third of its weight of pure extract, it is remarkably soothing, and, judging by my own experience, I think it promotes quiet and refreshing sleep.

I am not aware that the extract of the root has ever been used in this way before, but I think it must commend itself to every pharmacist, as, besides being cleaner, the root is always more to be relied on for medicinal activity than any other part of the plant.*

I am, gentlemen, yours respectfully,

JOHN BALMER.

205 St. John Street Road, London, E. C., April 20, 1869.

—*London Pharm. Journ., May*, 1869.

CARBOLIC ACID PLASTER.

BY JOSEPH HIRSH.

Surgery has so far employed carbolic acid in three shapes, viz.: that of carbolic oil, being a mixture with linseed oil; of carbolic lotion, which is a dilute solution in water; and that of carbolic paste, which is formed by its mixture with chalk.

The preëminent position, in which the success with this drug has placed it, in surgery, prompts me to suggest its use in a more portable form, which, with the virtues of the above prepa-

* A process analogous to this has been in use for some time past in Philadelphia, and the Pharmocopœia Committee of the Philadelphia College of Pharmacy have adopted the extract of the root of belladonna as the basis of belladonna plaster in their revision.—EDITOR A. J. PHARM.

rations, would avoid some of the objections inherent to those referred to, prominent among which I might mention their odor.

For this purpose I would suggest the carbolate of glycerin, which, with isinglass, forms an even, homogenous mixture, capable of being spread on cloth or paper in the same manner in which ordinary courtplaster is prepared, while it is easily miscible with any of the odorous principles with which nature abounds, and which suffice to mask the inherent odor of the acid. The presence of glycerin prevents the complete drying of the isinglass, and preserves it in that elastic, india-rubber like state, which prevents the escape of any carbolic acid.

If, as in courtplaster, the tissue is coated twice, the top layer will certainly preserve the carbolic acid of the lower stratum as securely as a well-stoppered bottle would, so that the plaster is not likely to suffer a diminution of its good qualities by age.

But as both coats are extremely thin, the moistening of the plaster on its application, conjointly with the elevated temperature of the skin applied to, removes at once every impediment to the absorption of the carbolic acid by the cuticle beneath it.

The presence of carbolic acid would not preclude the use of arnica in such a plaster, if desirable, although the modern taste for simplifying the existing combinations of remedial agents would hardly recommend such a mixture, the efficacy of which would depend npon the presence of carbolic acid.

This rebuke of unnecessary complication cannot be urged against the presence of glycerin, as this substance aids greatly in producing a homogeneous mixture of the acid, isinglass and oil, used for the concealment of the odor of the acid, while it also produces and preserves the elasticity of the plaster.

The side of the tissue not coated with the carbolate may, like that of courtplaster, be rendered waterproof, for which purpose a solution of india-rubber, paraffine or of collodion would be most suitable.

Upon being rendered waterproof, paper, as suggested above, may in many cases be substituted for silk or other tissue, as the waterproof coating on one side, as also the two of isinglass on the other add to it considerable cohesive strength.—*The Pharmacist, Chicago, March*, 1869.

A NEW MODE FOR THE PREPARATION OF SULPHATE OF MANGANESE.

By F. Mahla.

The methods for the preparation of Sulphate of Manganese as suggested in the various hand-books of chemistry do not only give unsatisfactory results—they are also difficult and exceedingly unplesant to execute. It seems to me, therefore, that a new mode for the manufacture of this salt would be acceptable to the profession.

I use as material for the preparation of Sulphate of Manganese the liquid which remains in the retorts after a chlorine generation. To this I add carbonate of soda in a sufficient quantity to throw down all metallic oxides, or until it has acquired a slight alkaline reaction. The precipitate thus produced is collected on a muslin filter and washed with pure water until the filtrate does not produce any more a marked reaction with nitrate of silver.

Three-fourths of the moist magma are now placed into a porcelain evaporating dish, and dilute sulphuric acid added in sufficient quantity to effect a complete solution. This is heated to near the boiling point, and the reserved one-fourth of the precipitate added in small portions at a time, until the liquid after filtration is not blackened any more by the addition of tannin. The entire bulk of solution is then passed through a filter and the filtrate with wash waters evaporated to crystallization, which does not take place till the liquid has acquired almost a syrupy consistency. The first crop of crystals is sometimes contaminated with sulphate of lime, owing to the presence of carbonate of lime in the commercial peroxyd of manganese. It is easy to separate this compound by evaporating the liquid to dryness, when, on redissolving the dry residue in a small quantity of water, the sulphate of lime, owing to its lesser solubility, remains as an insoluble body, from which the solution of Sulphate of Manganese can be separated by filtration.—*Pharmacist, March*, 1869.

Chicago, February 16, 1869.

A POISON FOR RATS.

According to the French 'Moniteur' there are in France upwards of two thousand millions of rats and other rodents. Supposing each of these little quadrupeds to commit the damage of only one centime per annum, this loss would amount in the aggregate to twenty millions of francs annually. Hence it is most desirable to find some means of destroying this vermin in large numbers as expeditiously as possible. Nux-vomica, arsenic, phosphorus, and traps have been successively tried, but with no very decided success, and certainly not equal to the rate of increase of these prolific creatures. Recent experiments, however, show that squills (*Scilla maritima*), the bulb of which is much used in medicine, is not only a powerful poison for rodents, but also one they are very fond of. The way of preparing it for the desired purpose is as follows:—One of the bulbs is cut into slices, hashed and bruised, then done in the pan with fat, which is afterwards strained through a cloth and poured into broken plates and saucers to be placed in the cellars and other places infested with rats, mice, etc. To prevent dogs and poultry from eating of this poisonous compound in stables, pigeon-houses, or farmyards, it may be put into a wooden box, about a foot and a half long, and having a hole at each end. The rat gets in at one end and goes out at the other, after partaking of the noxious food, which soon kills it. Squills may also be reduced to powder for the same purpose by bruising them in a mortar to a pulp, which is afterwards incorporated with as much flour as it will hold. This paste is then rolled out, as they do for a pudding, then cut into shreds, which are left to dry on hurdles or on sheets of pasteboard, and are afterwards pounded in a mortar. The powder thus obtained will keep for years, and may be put into boxes or barrels. If manufactured on a large scale, it may become a profitable article of exportation. In Algeria squills cost nothing, the country being absolutely overrun with them.—*Lond. Pharm. Journ., Nov.*, 1868, *from Times.*

NOTE ON THE SO-CALLED CARBOLIC ACID, OR COAL TAR CREASOTE.

By Edward R. Squibb, M. D.

(Continued from page 270.)

Neither color, consistence, nor odor, however, can be relied upon as any useful indication of real value, but it happens that there is one very simple and very easy test of value which is infallible. All the useful tar phenols are entirely soluble in water, while the useless substances with which they are naturally associated are not,—at least to any practical extent. But as some of the phenols require a large proportion of water to dissolve them the water in testing them should always be taken in excess. A fluidounce of the creasote well shaken with one gallon of water, and the whole passed through a small filter of two or three thicknesses of good filtering paper well wetted in the funnel at the time of using, will decide its quality at once, and the proportion of insoluble oily matters which do not pass through the filter may be roughly estimated when in sufficient quantity, by breaking the point of the filter over a graduate measure. The creasote, when of good quality, should contain from 90 to 96 per cent. soluble in this proportion of water, and then the residue which will not pass the wet filter is too small to be roughly measured, though very easily seen, estimated, and compared with residues from other samples. Much of the impure carbolic acid, or the badly named "solution of carbolic acid," contains less than 90 per cent. of soluble phenols, while the so-called crude carbolic acid of the market varies very much, samples being met with of all values, from 10 or 15 per cent. up to 50 or 60 per cent. These are all proportionately useful for disinfectant purposes, and, when properly managed, for medical uses also, as far as they go. But they are greasy, tarry, dirty mixtures, difficult of management by ordinary means, and should therefore generally be rejected for common uses, and always when for medical uses. In applying the test of solubility to the creasote to determine its value, it must be remembered that in the interest of profit or gain, fraud may be practiced, but for the present it is generally sufficient to see that the creasote to be tested is neither acid nor

alkaline to either wet or dry test papers, and that it does not smell very strongly of sulphuretted hydrogen.

When applied to the skin of full strength it turns it white, and shrivels it somewhat, producing a smarting, tingling numbness, which is diminished by holding the part low, but increased by holding it high. It is easily washed off, but leaves a mark of red irritation, which on delicate surfaces produces desquamation even from momentary contact. The free application of sweet oil tends to allay this irritation and allay the smarting. When swallowed in quantity it is an irritant poison, and very rapid in its action. As it readily mixes in all proportions with all oils and glycerin, the very first thing to be done in any case of poisoning by it is to administer any oil that is nearest at hand, but the more bland the better, and this in large quantity proportionate to the quantity swallowed. If no other oil be near by, lard or butter are better than kerosene, but the latter should be used rather than wait even a short time for a better. As soon as practicable after the oil, an emetic, consisting of a large teaspoonful, or two teaspoonfuls each of mustard and common salt, stirred quickly into about half a pint of lukewarm water, should be given, and its operation, if not prompt, should be facilitated by draughts of lukewarm water. It is not a virulent poison in any reasonable or probable quantity, and a thorough evacuation of the stomach will commonly ensure safety.

The uses of the creasote, undiluted and undissolved, are as yet few, and are altogether sanitary or hygienic,—never medical, and rarely as a disinfectant for medical uses. Smeared over surfaces which are out of the way of ordinary contact, and where it is not liable to be rapidly washed away by drainage or sewage, its application lasts much longer than that of any solution, and is therefore better for places not easily accessible. But it is scarcely doubtful that the same quantity applied repeatedly at intervals in solution, would produce double the useful effect. Undiluted it may be applied to the sides and ceilings of cellars, water closets, stables and out-houses, and to the mouths and throats of drains, sewers, garbage receptacles, etc., and to close alley-ways and passages. But for many of these uses it is best applied diluted with some non-drying oil, as whale oil, or other

cheap animal or fish oil, or petroleum, or tar oils, but not with drying oils, such as linseed oil. When mixed with any cheap oil in proportions varying, to suit the purposes, between 10 and 25 per cent. of the good creasote, it is applicable to more numerous uses. Smeared upon wood-work or other absorbent surfaces, or even upon the coats of animals, it is much more lasting, as well as stronger in effect than the solutions, and saves much time and labor where it is important to economize these.* This is the form in which it is best applied to the live-stock cars and pens of railroads, and it is also a collateral advantage of this form of applying it that the oil so fixes it and holds it upon rough absorbent surfaces, that the filth which lodges and accumulates upon the surfaces to which it has been applied will be disinfected by it, and may be washed off two or three times with water, and the surfaces still retain effective quantities of the oily mixture. Wood or plastered walls can be so saturated with such mixtures as to last for a long time, but the effective influence of the agent is given off much more slowly, and is more feeble than when, in the case of watery solutions, the vapor of the vehicle passes off and carries the agent along with it into the air. This affords the plain indication for a rule that where surfaces and solid substances are to be disinfected through constant use, and through rains and ablutions, oily mixtures are best. Where the air is to be disinfected or charged with the creasote, and where frequent aspersions can be conveniently used, watery solutions are best.

Any inert powder which may serve as a vehicle can be used for mixing and holding this liquid for disinfectant uses. Half slaked lime perhaps forms the best powder in which to mix it, and a proportion of 10 to 20 per cent. is a good one. These mixtures are often called carbolate of lime. Saw-dust or sand make excellent vehicles for it; and sand, moistened with the creasote and swept over the floors of hospital wards once or twice a day, is a very efficient way of using it.

* A friend of the writer, Mr. Ferris Bringhurst, of Wilmington, Del., mentions that such a mixture smeared upon the shaggy coat of a dog to dislodge fleas is so remarkably permanent that after an interval of many months the odor of the phenols becomes distinct every time the dog gets wet. This also illustrates the power of watery vapor for carrying these substances into the atmosphere.

Two solutions of this creasote may be usefully recognized and established as sufficient for all its general uses, whether sanitary or medicinal. One may be called a saturated solution, and the other a standard solution, such having been used under these names to some extent in the army and in some large hospitals and found convenient, during some years past.

The saturated solution is made by shaking five measures of the creasote with one hundred measures of water, and filtering the solution off through two or three thicknesses of wet paper. It is not necessary that the water should be warm, indeed it is better used at ordinary temperatures, because the filtrate, which is apt to become turbid or milky at best, becomes much more so in proportion as it is cooled down below the temperature at which it was filtered. This milkiness, though unsightly, is of no practical importance, and may be disregarded in most of the uses to which the solution is applicable. When applied to nicer uses it may be filtered a second time, after standing. If the creasote be not very thoroughly purified the solutions, on exposure to light, become of a pinkish or reddish tinge, which renders them inelegant, to say the least. The saturated solution will contain from 2 to 5 per cent. of the creasote in proportion as the latter consists mainly of the one Phenol or the other. As the creasote commonly occurs, it will contain about 4 per cent., while if made from the crystallized Phenol or crystallized carbolic acid, it will contain 5 per cent., and will not be strictly a saturated solution, since water at summer temperatures takes up about 6·6 per cent. of the crystals, and makes a perfectly clear and colorless solution even without filtration. At low temperatures, however, these solutions become milky if holding more than 5 per cent. Hence 5 per cent. was fixed upon as the maximum strength for what is called saturated solution. In the management of the crystallized Phenol (carbolic acid) for dispensing, it is perhaps the best practice, on buying a pound bottle of it, to melt it by setting it in water at about 37° C. or 100° F., and then add water in the proportion of one fluidounce to the avoirdupois pound. It will then remain permanently liquid except at very low temperatures, and should be dispensed by measure, being still used as

"crystallized carbolic acid." When a bottle of it has been treated in this way, the person who adds the water should indicate it by passing a pen mark through the word "crystallized" on the label, or by some other significant mark on the label. It is a curious circumstance in connection with the use of this crystallized Phenol that when thoroughly melted it will often remain liquid for days and weeks, and no agitation or moving the stopper, or other ordinary means, will cause it to recrystallize. But sooner or later a time will come when, even without change of temperature, it will be found solid. The writer has seen this crystallization commence in a pound bottle which had been liquid for many days, and be completed within a few seconds. The dropping into the liquid a particle of the crystals from another bottle will determine the crystallization at once. Cooling down by ice water will also cause it to crystallize, but it must be cooled far below its melting point.

The saturated solution is useful for many surgical and medical purposes, but chiefly as a disinfectant for pouring upon infected clothing and washing infected furniture and utensils in time of epidemic or contagious disease, etc. If the circumstance developed in the experiments with dilute solutions be accepted,* namely, that the creasote is itself destroyed or used up in proportion to what it accomplishes, it will serve as a key to its use in more or less concentrated form. It is often if not commonly used in great excess, and up to this time no one appears to know how little will serve the purposes to which it has been successfully applied.

The standard solution is a one per cent. solution, and is made by agitating one measure of either the crystallized or the liquid creasote with one hundred measures of water, and filtering through two or three thicknesses of wet paper when necessary.

* Reference is here made to some collateral observations in the experiments with very dilute solutions which were not investigated, much less proved. And as the indications are in opposition to the generally received opinion they cannot be trusted. The bare circumstance is that dilute solutions made with water containing organic matters, appeared to give less taste and smell than when made with distilled water, and appeared to lose a part of their taste and smell on standing but a short time.

It is almost identical with the officinal "Aqua Creasoti," which is directed to be in the proportion of one fluidrachm to the pint of distilled water, or one to one hundred and twenty-eight, and the two may be used indiscriminately for most purposes. This appears to be the solution best adapted to the largest class of common uses of this substance, and perhaps it would not be too much to say that it subserves all but the exceptional uses. Its chief and great recommendation is that it may be profusely and even carelessly used with good average effects, without risk or danger of any kind, and without being very disagreeable to most persons, even when first used. A pint of the creasote to twelve gallons of water, or three or four pints to the barrel, makes a sufficiently definite solution for profuse general use, and those hospitals and asylums which have adopted it in this rather rude though practical way, have generally been well satisfied with the results obtained. For medical purposes, external or internal, it should be made with more accuracy, and for nicer uses should be filtered, but this filtration is addressed to the eye, rather than to any important good actually obtained by it, unless the creasote be of poor quality. With the cheaper liquids, and even with some of the dearer ones sold prior to the present time the solutions had either to be filtered, or be allowed to stand until the light oils rose to the surface and the heavy ones fell to the bottom, but much of that now produced affords good solutions, which for most disinfectant uses do not require filtration.

The method of making this solution upon the most economical scale, recommended about two years ago for army and other hospital uses, and adopted with success in some instances heard from, is to take an ordinary tight barrel to stand on one end, upon a box or other elevation in some convenient place, fitted with a common faucet placed an inch or two above the lower hoops, and having a hole bored in the head that stands uppermost, and the bung permanently secured in place. Half fill the barrel with cold water, and add to this about three pints or three pounds of the creasote, (impure carbolic acid). Turn the barrel down upon its bilge with the faucet uppermost, and the hole in the upper end corked, and agitate it backward and forward very thoroughly. Then set it up, and fill it nearly full of water

at ordinary temperatures, cork the opening, and again turn it down and agitate it well. It is then ready to be placed upon its stand, and after standing a few hours is ready for use, at a cost of not more than 20c. per gallon. In times of epidemic diseases, or any large and frequent demand, this plan is recommended to pharmacists, who might sell the solution by the pint or gallon, at say 6c. per pint, or 40c. per gallon.

The uses and applications of this solution are so numerous that it is impossible to allude here to more than a few of the prominent ones. When it is remembered that this substance in very small quantities (how small no one yet knows,) is azymotic —that is, opposed to or fatal to all the lower orders of both animal and vegetable life; and is antiseptic—that is, opposed to putrefaction or decay, preserving even the organisms which it kills. And when it is remembered that all contagious, infectious and epidemic diseases are believed by good authorities, to be zymotic—that is, of the character of a fermentation dependent upon living organisms; and that all the processes of putrefaction and decay are zymotic also—that is, dependent upon fermentations of the kind which are caused and kept up through the agency of cell-life, or organisms of low vitality, a good key to its powers and uses is at once obtained, and at the same time a good guard against its misapplication is established. Thus it will be seen at once that it is not a disinfectant at all, in the sense of deodorizing, except in its effects upon the causes which produce some odors; and its whole reputation as a deodorizing disinfectant is unsound and fallacious. Applied to the causes and sources of most of the hurtful odors which are not purely chemical or inorganic, it at once arrests the processes which give rise to them, and thus it cuts off the supply of these emanations. But the odors already formed, as such, are probably not at all influenced by it, except in being masked and covered up by its own overwhelming odor. All odors, to a great extent at least, follow the laws of diffusion of gases, and the sources of supply once cut off, these laws of diffusion so quickly dilute and disarm these mere results or effects, that they become practically insignificant; and it is a matter of but little moment as to exactly how the result is attained, or to what agency the credit belongs,

if it was not for the undisputed fact that accurate knowledge is the essential element of the greatest success in all things. The hurtful material in all foul emanations and foul air is probably inodorous and insensible, but is endowed with vitality, and the laws of nature tend to direct this embryonic material to a soil and climate fitted for its functions of germination and reproduction. When the material fails to come under these favorable conditions it either dies, or lies dormant until the vicissitudes of nature become favorable to its development. But here the opposing influences working under the same laws come to exert their powers, and the same laws which distribute and disseminate these germs of fermentation are as ready and effective in distributing the antidote or azymotic. Hence, as an illustration, cattle acclimated to a given zymotic disease, through which they have more or less perfectly passed, disseminate the cause or seed of this disease by means of their excretions. The germs fall with the excretions upon the soil of the roads and fields over which these cattle pass, and may or may not there find the conditions necessary to their germination and growth. The excretions dry up to dust, and the winds scatter this dust and these germs over the pastures and through the atmosphere, and they are thus present in sufficient quantity, when other cattle not acclimated nor protected against the influences come within the infected locality. Carried into the lungs and stomachs of such, with the air and food, they meet with the conditions necessary to their growth and reproduction. Now if the azymotic could be distributed in the same way, there would soon be an end of zymotic diseases, but with it an end of all fermentation, and an end of the present order of creation, in which fermentation performs an indispensable part.

By following out some such abstract of the present state of knowledge, gleaned from the various authorites, the safest, best and most permanent indications to direct the uses, and prevent the abuses and misapplications of such a substance, may be easily obtained; and it remains only for the writer to mention some special uses which might not be reached through reasoning or which have been most prominently successful in practice.

In the treatment of burns and scalds this is the best applica-

tion known at the present day; and so far as the intense pain and its depressing effects, during the early stages of these accidents, is concerned, it leaves little to be desired. This standard solution, or the officinal solution of creasote, applied of a strength varying somewhat with the degree of the injury and the character of the surface burned, by means of light cloths frequently wetted, very promptly relieves the pain. Upon delicate, sensitive surfaces the solution should be diluted with an equal volume of water; but upon ordinary and exposed surfaces it may be used with little or no dilution. It is a perfectly local anæsthetic, and whenever the pain and its causes are perfectly local, and partake of this character belonging to burns, it may be used with prompt good effect.

In erysipelatous inflammations, and under other circumstances of exalted sensibility, care is needed not to use solutions too strong, since such produce pain of the same character as that sought to be relieved. There is a very curious point in the relations of this substance to pain which the writer has never seen noticed, and which is worthy of note and investigation. If a part of the hand or foot be burned and painful, the pain is much relieved by putting the part in an elevated position, as is well known. If to a burnt surface the solution of creasote be applied too strong, the pain appears to be but imperfectly relieved, and if the part be then elevated the pain and tingling is much increased. This is the bare fact, confirmed by repeated observations, and when taken in connection with the circumstance previously mentioned, that the burning and irritation caused by the application of the strong creasote to the skin is increased by holding the part in an elevated position, it seems to indicate that the pain of burns, and of erysipelas, etc., may be supplanted and replaced by the pain of the creasote, when this is applied too strong or too freely; and that the test is, that while the original pain is relieved by draining the blood out of the part, the superinduced pain, or the pain of irritation from excessive use of the creasote, is aggravated by this procedure.

Another prominent use of great importance is its power to prevent and arrest suppuration or the formation of pus. Many of the recently published results of its use for this purpose are

wonderful, in many respects; and not the least wonderful of these results is the apparent impunity with which so powerful and so caustic a substance as the crystallized Phenol has been introduced between the flaps in surgical operations, and within the wounds and injuries in compound fractures, etc. This inconsiderate and heroic practice cannot, however, be needed or justified in order to obtain the best results of the agent; and he must be a bold man who originated the practice, unless he reached the results by the failure of more dilute applications.* All suppurating surfaces, whether of pyogenic membrane or of altered mucous membrane, appear to be benefitted by the application; but it is often a very nice point to determine the strength, or rather the dilution, best adapted to the object in view. For gargles, washes, injections, &c., used in relation to inflammations, suppurations, etc., the standard solution is, in a large majority of cases, much too strong, even when the weaker crystallized Phenol is used. Under this division of its uses may be classed its applications in diptheria, croup, aphthous diseases, chronic cystitis, leucorrhœa, ulceration of the rectum, fistula, abcess, carbuncle, etc. From some observations yet incomplete and unpublished, it appears to be very effective in the treatment of gonorrhœa and primary chancre, an effect well understood if the zymotic character of these diseases be proved. In all herpetic and impetigenous diseases of the skin it is very effective. The writer has seen half a ring-worm, herpes circinatus, cured by it, whilst the other half, to which it was not applied, remained. Dilute solutions used as mouth washes soon wear out the at first unpleasant taste and odor, and when habitually used, as in the

* Since this paper was written Professor Lister, of the University of Glasgow, to whom this criticism refers, has used a watery solution, which he says has in no instance failed, and which being a less powerful irritant does not produce sloughing from caustic action, nor produce obstinate vomiting for twenty-four hours after its application, as the crystallized acid sometimes did. Professor Lister's papers "On the Antiseptic System of Treatment in Surgery" show how easy it is to overdo a good work, and to almost hopelessly complicate a simple expedient in surgery by cumbrous and hurtful directions and details. That an earnest, honest worker may sometimes do this is within the experience of the writer of this note.

daily brushing of the teeth, they prevent the accumulation of tartar, which is a parasitic growth, and keep the mouth and teeth clean and healthy. This habitual use corrects and prevents fœtor of the breath from decayed teeth, and when taken internally corrects and prevents that which proceeds from the stomach. The internal uses of the creasote are, as yet, not well studied; they are, however, numerous and important, and present a large field for investigation, particularly in their relations to the exanthemata, and indeed to all zymotic diseases. Recently published accounts of its use, both externally and internally, in scarlatina are favorable.

From a sanitary or hygienic point of view its uses and applications are more general than those of any other article, or perhaps even than all the other agents taken together. Indeed it is of almost universal applicability, but with the single important disadvantage of its disagreeable odor. This odor is, however, less disagreeable as the oils and tars are more perfectly separated, and in the best crystallized Phenol are not very objectionable to persons in general. Even when very disagreeable at first, it becomes less so, and, in a great majority of instances, soon ceases to be disagreeable at all. All the evidence that can be collected goes to show that the odor and vapor are wholesome and never hurtful, even by prolonged exposure to a saturated atmosphere. It is stated to be a tonic to those who work in it, and to have a general tendency to robust health. Its antiseptic or preservative powers have been long known, though but recently investigated, and it is now believed, on good authority, that the process of embalming used by the ancient Egyptians, whereby their mummies are handed down through thousands of years, owes its efficacy and success mainly to this substance and its homologues. Many generations of our own time have protected and preserved their meats and fish through its agency as derived from smoke, and all the preservative agency of smoke, tar, soot, etc., is derived from this group of substances. Small animals, insects, etc., killed by it dry up in the air without putrefaction, and it has been said by a French writer that 15 grammes of it would preserve an adult human body for sixty days after death. For use about the dead it is probably destined ultimately

to take the place of ice, and of all modes of embalming. It is said that a dead body enveloped in cloths, kept moistened with dilute solutions, may be kept well preserved and in a natural condition, without hurtful emanations, for any reasonable length of time, and that its free use after death from contagious or infectious diseases, destroys the influence of the diseases. When bodies are to be preserved for some time the solution should be injected into all the natural openings, and may be introduced into the abdomen and thorax, and even into the cranium, by means of a trocar and canula without mutilation. Careful injection of the blood vessels is, however, the most sure and effectual process for preservation.

In all cases of infectious, contagious and epidemic diseases the standard solution, either entire or not diluted more than its volume, should be freely used upon the bedding, clothing and utensils of the sick many times each day, by sprinkling, sponging, etc.; and the exposed parts of the body, and those soiled by dejections, may be frequently sponged off with great advantage. All bedding, clothing, etc., removed from the sick and dying, should be at once well moistened with the solution and be then immersed in water; after being washed and ironed it should be lightly sprinkled with the solution. A portion of the solution should be put into close stools, urinals, etc., immediately after these have been cleansed, to remain there and receive the next dejections. The disinfectant thus gets immediate action upon the infected matters, and they go together into the sewers under the best sanitary conditions. Walls, ceilings, carpets, floors and furniture of infected rooms should be occasionally sprinkled with the solution. This may be conveniently done by dipping the end of a common dust brush into the solution poured out into a soup plate, and then throwing the solution off the brush in a kind of shower upon the walls, ceilings, etc.

It is not only in contagious and infectious diseases that the solution is useful, but wherever deficient ventilation, or want of cleanliness, or offensive discharges corrupt the atmosphere of apartments used either by the sick or well. Its free use is fatal to all the small vermin which infest and prey upon the bodies of

the diseased or healthy, and even tends to diminish the annoyance from flies and mosquitoes.

Much of the above information is gleaned from the current Journals, foreign and domestic, and as the authorities are too numerous to be quoted, the statements are guarded by a caution which becomes necessary to avoid over-advertising a novelty which is in some risk of becoming fashionable.

Since commencing this note the writer has received from Messrs. F. Crace Calvert & Co. a series of samples of their products, which he takes occasion to exhibit to the Association in connection herewith. Their "crystallized carbolic acid No. 1," is a very beautiful product, hitherto rarely seen among us. It is very dry and white, showing no signs of discoloration by light for some time, but ultimately becoming of a dusky pink color. The No. 2, medicinal acid, shows but little liquid, even at this summer temperature, but is not so nice as the No. 1. The No. 3 is a still lower grade, and contains much liquid. Quantities of this grade, imported by the Chief Medical Purveyor of the army a year or two ago, and put up by the writer, was almost entirely liquid, even at low summer temperatures.

The liquid specimens, Nos. 4 and 5, have not been examined for want of time, but it is supposed that the No. 5 is practically better than any. The grade No. 3 is that adopted for the use of the British army and navy, because it well subserves all the uses, medical as well as disinfectant. In connection with these is shown a specimen of the creasote put up for the use of our army during the past two years, under the name of impure carbolic acid, by the writer. It contains about 90 per cent. of the tar phenols and has proved a most efficient article in use. This is made by the coal-tar distillers around New York, but at a much higher cost than the preparation from abroad which resembles it in appearance. A specimen is also shown of the standard solution put up unfiltered, in quart bottles, with directions for use. This was put up as cheaply as possible for the Metropolitan Board of Health, and, although unsightly and unpretending, it is really an efficient and useful disinfectant, capable of subserving almost all the general uses of the creasote.

Brooklyn, April 16th, 1869.

POISONOUS DYES.

Judging by some facts which have recently come to our knowledge, the poisonous effects of certain dyes, applied externally or swallowed, will soon attract a considerable share of public attention. We allude more particularly to the dyes of the aniline series, respecting two of which, known abroad as *coralline rouge* and *coralline jaune*, Tardieu, professor of legal medicine at Paris, made a very important communication to the Academy of Sciences on the 1st inst., of which the following is an abstract: —In the month of May, 1868, Tardieu was consulted by a young man, twenty-three years of age, quite healthy and free from herpetic rash, who had been attacked in both feet with a very acute and very painful vesicular eruption exactly limited to the part of the foot covered by the shoe, and tracing on the skin the perfectly regular form of the "pump" which he wore. The skin was violently inflamed, swollen, of a uniform red color, covered with innumerable small vesicles, uniting to form large bullæ filled with a sero-purulent liquid. The eruption was attended by general *malaise*, fever, headache and pain over the heart. The seat and form of the eruption led Tardieu at once to the conclusion that its cause was entirely local; and he did not hesitate to trace it to what the young man was wearing on his foot. He had only a few days previously taken into wear some socks of red silk of a very elegant and fashionable color.

Some time after this, a young man, a friend of his, was affected precisely in the same way from the same cause. Later still, in the month of September, the papers published a letter, in which M. Bidard, professor of chemistry at Rouen, described a similar observation which he had made on a pair of socks sent to him by an Englishman, and which presented, on a lilac ground, circular lines in silk of a bright red tint. The inflammation of the skin of the feet was limited to the parts in contact with the red lines. The lilac color was given by the violet of aniline, the red by coralline. Lastly, it is but a few days since the Paris journals gave the case of an American lady, who, having worn stockings of red silk, found her legs covered with blisters, some

of which had ulcerated; and she suffered from giddiness and severe pains.

Tardieu, assisted by M. Roussin, submitted the socks worn by the first patient seen by him to a careful examination. They were treated by boiling alcohol, in which the red coloring matter quickly dissolved. This alcoholic solution, evaporated to dryness, yielded an extract of which the poisonous properties were proved by the experiments now to be described.

The dry coloring matter, redissolved in a small quantity of alcohol, was injected under the skin of the thigh of a dog, a rabbit, and a frog. The three animals died; the frog the same day, after four hours; the dog the next day, after having survived thirty-six hours; the rabbit not till the day following. The dog and the rabbit had excessive and incessant evacuations. The experimenters then determined to try the coralline itself. In order to obtain it, they applied to M. Persoz, jun., who discovered it in the year 1860, and who placed at their disposal three specimens: the first a pure coralline, the second the red coralline of commerce, the third the yellow coralline. The coralline, or *péonine*, is obtained from rosolic acid, which is itself a derivative by oxidation from phenic acid. It is formed in a close vessel, heated to 150 degrees, by the contact of rosolic acid and ammonia. The result is a solid matter, in plates, of a poppy-red color, green, or dull yellow, by reflected light, nearly insoluble in water, soluble in alcohol and oils, and which has all the characters of an amidic acid.

A quantity of the alcoholic solution containing 2⅓ grains of solid coralline was injected under the skin of a dog of medium size. The next day, and the day after, it was dispirited and depressed, suffered from well-marked intestinal derangements and loss of appetite, and the thigh near the seat of the injection had become painful. The animal showed signs of suffering, and walked lame. The fourth day a quantity equivalent to 3 grains of coralline was injected. The symptoms reappeared almost immediately, the alvine evacuations returned, the weakness continued to increase, the fever grew more and more intense, and the pain in the thigh became more acute. The animal trembled and could not support itself, its eye grew dim, and it died the

third day after the second injection. A rabbit, after a single injection containing 1½ grains of pure coralline, died in four hours with the same symptons. Less than ¾ of a grain of the coloring matter killed a frog still more quickly.

The examination of the viscera of the animals so poisoned was full of interest. At the point where the coralline had passed under the skin, there was acute inflammation of the cellular tissue, with purulent infiltration. The stomach was healthy, but the intestines, enormously distended with fluid, bore distinct traces of acute inflammation of the mucous membrane. The liver had undergone fatty degeneration. Lastly (and this is the essential character of the poisoning), the lungs in the dog, and still more in the rabbit, appeared as if themselves stained by the coloring matter, and presented throughout a very beautiful scarlet tint, which spread uniformly over their surface, so as to efface the lobular divisions and the vessels ramifying upon them.

M. Roussin, by an ingenious process, succeeding in dyeing red a skein of silk with the coloring matter taken from the liver and lungs of the poisoned animals. In this way the coralline, which had been the cause of the poisoning, was detected by the characteristic property of the coloring matter, just as atropine and digitaline are identified by the power they respectfully possess of dilating the pupil, and arresting the heart's beat. It was a new application, as happy as unexpected, of the physiological and experimental method now so largely used in the detection of organic poisons.

Coralline, then, is doubtless a very energetic poison. When introduced into the living body, even in a small dose, it may cause death. It belongs to a class of bodies which is every day increasing with the incessant progress of the chemical arts; and it affords a new example of the importance, both for hygiene and legal medicine, of following the march and progress of industry, and of studying the influence which its recent conquests may exercise on the health of human beings.—*Lond. Pharm. Journ., March*, 1869, *from Les Mondes, par M. l'Abbé Moigno, 4 Février* 1869.

DETECTION OF PICROTOXIN IN BEER.

Köhler's method for the detection of picrotoxin, the active and poisonous principle of cocculus indicus, is based upon the fact, that when ammonia is present, acetate of lead precipitates as insoluble matter from beer, such substances as dextrin, gum, glucose, while the picrotoxin, which is not thus precipitable, can be removed by means of ether from an acidified fluid. The beer to be tested is first mixed with ammonia until it is distinctly alkaline, the ensuing precipitate of phosphates is allowed to settle, and after the fluid has become clear, a boiling hot and concentrated solution of acetate of lead is cautiously added as long as a precipitate ensues; excess of lead solution should be avoided. The precipitate so obtained should be collected on a filter and washed with hot alcohol for a short time; from the filtrate, the lead is removed by means of sulphuretted hydrogen gas, the sulphide of lead removed by filtration, and the filtrate evaporated on a water-bath to the consistence of a syrup; the fluid obtained is treated with ether, the latter separated from the aqueous residue, and the ether removed by evaporation. Picrotoxin reduces the oxide of copper to protoxide, is soluble in sulphuric acid, exhibiting a saffron yellow colored fluid. When bichromate of potash is added to the sulphuric acid solution, a violet coloration ensues, which ends by becoming bright green. If the beer contains strychnia simultaneously with picrotoxin, or extract of cocculus indicus, the strychnia remains behind in the syrupy fluid which remains after the ether is separated therefrom by means of a stoppered funnel.—*Lond. Chem. News, April* 9, 1869, *from Zeitsch. f. Anal. Chem.*

TESTING OPIUM.

Professor Schneider has proposed in the 6th revised edition of the Pharmacopœia Austriaca, the following method for testing the goodness of opium. Ten grammes of previously dried and powdered opium is treated with a mixture of 150 grammes of distilled water, to which 20 grammes of pure hydrochloric acid, sp. gr. 1 12, is added; the residue, after extraction, should not exceed 4·5 grammes weight; to the acid fluid 20 grammes

of common salt are added, and the precipitate thereby caused is collected, after 24 hours, on a filter, and the latter washed with a solution of common salt; to the filtrate, ammonia is added, and the fluid left standing again for 24 hours; the crystals which have separated are collected, re-dissolved in acetic acid, and precipitated with ammonia; the precipitate so obtained is washed, dried, and weighed; its weight should not be less than 1 gramme.—*Lond. Chem. News, April* 9, 1869, *from Zeitschr. f. Anal. Chem.*

COLLODION FOR PROTECTING SILVER WARES.

The loss of silver which results from the impregnation of our atmosphere with sulphur compounds, especially where gas is burned, is very great. It has been said that many thousands of pounds' worth go down our sewers annually in the form of dirt from plate cleaning, and the loss of one large house on Cornhill from this source has been described to us as serious. Silversmiths may, then, thank one of their confraternity—Herr Strolberger, of Munich—for a happy thought. He seems to have tried various plans to save his silver, if possible. He covered his goods with a clear white varnish, but found that it soon turned yellow in the window, and spoilt the look of his wares. Then he tried water glass (solution of silicate of potash), but this did not answer. He tried some other solutions, to no purpose; but at last he hit upon the expedient of doing his goods over with a thin coating of collodion, which he finds to answer perfectly. No more loss of silver, and no longer incessant labor in keeping it clean. The plan he adopts is this:—He first warms the articles to be coated, and then pays them carefully over with a thinnish collodion diluted with alcohol, using a wide, soft brush for the purpose. Generally, he says, it is not advisable to do them over more than once. Silver goods, he tells us, protected in this way, have been exposed in his window more than a year, and are as bright as ever, while others unprotected have become perfectly black in a few months.—*Chem. News, June*, 1869, *from Mechanic's Magazine.*

AMERICAN PHARMACEUTICAL ASSOCIATION.

The 17th Annual Meeting of the Association will be held in Chicago, on the 7th day of September next, at 3 o'clock, P. M. The specific place of meeting and the arrangements for the accommodation of those in attendance, will be announced by the Local Secretary. As this will be the first meeting held in the metropolis of the north-west, and will probably attract much attention in that section, it is earnestly desired that a large and widely diffused representation of the membership will give evidence of a continued and growing interest in the Association. Druggists and pharmacists eligible for membership are invited to present themselves as candidates, and thus aid in extending the Association and increasing its influence.

EDWARD PARRISH,
President.

PHILADELPHIA, 6th mo., 1869.

Editorial Department.

LEGISLATION FOR PHARMACY IN NORTH GERMANY.—The lower house (Reichstag) of the North German Parliament has under consideration a law to regulate industrial pursuits, which has passed the second reading. It contains the following clauses relating to apothecaries and physicians:

"SECTION 29. An approbation (or license), conferred on proof of capability, is required by apothecaries and those persons who designate themselves physicians (including surgeons, oculists, accoucheurs, dentists, and veterinary surgeons) or by equivalent titles, or who are recognized as such by the State, or by a community, or who are to be clothed with official functions. The license shall not be made dependent upon the previous academical promotion to the Doctorate.

"The Federal Council is to designate, in regard to existing wants in different parts of the Confederation, those authorities who are authorized to confer licenses valid throughout its limits, and to prescribe the directions concerning the proofs of capability, and to publish in the official newspapers the names of the licentiates.

"Licentiates will not be restricted in their choice of a locality to practice their profession, except by the regulations for the establishment and moving of apothecaries' stores now existing.

"The Federal Council may relieve persons from the examination in consequence of approved scientific standing.

"All persons who before the enactment of the proposed law had a legal right to practice in any State of the Confederation shall be regarded as licensed for the whole Confederation."

The latter section was approved by the Medical Society of Berlin, and

in Parliament was warmly advocated by, amongst others, Dr. Lœwe, who has resided and practised many years in England and the United States.

In adopting the 6th section, the Parliament *resolved* to request the Federal Chancellor to submit to the Parliament the draft of a law regulating uniformly for the entire Confederation the plan of conducting the apothecary's business and the sale of medicines.

M. Mueller, editor of the Pharmaceutische Zeitung, has sent a petition to Parliament asking the final adoption of this resolution,—not that the liberation of the practice of pharmacy, which would be the consequence, would make medicines cheaper or better, or the distribution of stores more favorable, but mainly to overthrow the condition of things brought about by existing laws in reference to the mortgaging of pharmaceutical stores, the capital invested in which is mainly owned by thousands of citizens, whilst the apothecaries themselves possess but a small fraction. M. Mueller had received confidential information from 593 proprietors of stores which were purchased for the gross amount of 15,662,620 thalers (each 70 cts. gold), whilst the cash paid for the same at purchase was only 4,751,200 thalers, leaving 10,967,240 thalers on mortgage, and representing a real value of only 6,855,440 thalers. Of these, 35 stores are free from debt, valued at 304,300 thalers, leaving the actual excess of mortgages *over* real value of the stores 4,416,100 thalers.

A calculation based upon these figures, to embrace the 2905 apothecaries in the Confederation, makes the following exhibit:

Mortgage value of 2905 apothecary's stores, 76,745, 212 thalers.

Amount paid for said stores, 22,295,507 thalers, of which sum about two-thirds, = 14,863,670 thalers were paid out of the private means of the owners. The excess of the mortgages over the real values is 21,633,635 thalers, making thus a total of 36,507,205 thalers, in the event of the final adoption of the clause. Unless a special law should provide for their relief and indemnification, the credit of pharmaceutists would be destroyed, and the foreclosure of the mortgages on more than one-half of the North German apothecaries' stores would render their proprietors bankrupt.

The artificial value of stores which this state of things induces is looked upon much as we do on the *good will* of a business, and has largely tended to hamper the liberty of pharmacy in Germany. Those who own the mortgages, unlike owners of stocks, expect to get annually their regular income without regard to the profits, any deficit in which has to be borne by the proprietors, who, in bad circumstances, are liable to foreclosure. It is greatly to be desired that some solution of this difficulty may be arrived at, so as to give greater independence of action to proprietors.

Pharmacy in Holland.—The scarcity of apothecaries' assistants (according to the *Pharmac. Zeitung*) has induced the "Netherlands

Society for the Improvement of Pharmacy" to pass a resolution to create a new class of assistants, whose education is to be conducted by the apothecaries of Amsterdam. During a period of two years they are to be instructed in the rudiments of the Latin language and in the dispensing of prescriptions. They shall then be regarded as examined apprentices, entitled to compound prescriptions, but shall not rank as assistants. The proposition has been approved by the Medical Council, but at the same time the responsibility to which apothecaries subject themselves was pointed out. In 1869 4 candidates have applied for examination as apothecaries, and 19 as assistants; 5 of the latter passed. M. Geerts, military apothecary, and formerly lecturer on chemistry, at Utrecht, has been appointed by the Japanese government, professor of natural history and chemistry at Nangaski. Another Dutch sanitary officer, Dr. Van Mansvebst, is professor in the same school.

THE THIRD INTERNATIONAL CONGRESS OF PHARMACEUTICAL SOCIETIES AND ASSOCIATIONS.—The Congress at Paris in 1867, at its second session, resolved to hold a third Congress in 1869. The Committee having the selection of the place, consisting of Messrs. Pfeffer, Robinet, Wolfrum, Dankworth and Beckert, has selected Vienna, and has entrusted the General Austrian Apothecaries' Association with the preliminary arrangement. In the *Zeitschrift*, published by this Association, on the 16th of January last, page 29—32, the directory publish a programme, and cordially invite active participation:

Programme.

The Third International Congress will be held in Vienna on the 9th, 10th and 11th of September, 1869, and will consist only of delegates of recognized Pharmaceutical Societies and Associations. Every such society or association may elect one delegate for every 50 of its members, whose function ceases with the Congress. The deputies must bring written credentials from the represented bodies. The objects of the Congress are discussions on professional and scientific questions connected with pharmacy. Members present at the first session shall elect the officers, consisting of a president, two vice-presidents, three secretaries and one interpreter, who shall edit the minutes of the Congress. Questions submitted to the Congress will be referred to committees, and their reports discussed.

The discussion will generally be in the German language, but foreign delegates, unable to speak German, may debate in their own language. The interpreter will intervene to aid them as much as possible.

Essays in writing on the subject under consideration are admissible only by sanction of the officers.

Essays on questions in the programme must be sent in before June 30th, 1869, to be considered. Decisions are by a majority of votes. All societies desiring to take part by deputy should inform the Committee before Sept. 1, 1869, and these and all other communications relative to the Congress are to be addressed to "The Committee of Organization of the Third International Congress, Vienna, City, Anna Street, No. 8, 2d story."

The questions proposed by the Austrian Society may be condensed as follows:

1. Are independent schools of pharmacy advisable?

2. What advantages will arise from the "Syndic Chambers," proposed at the last Congress?

3. Is the Medical supremacy in the regulation of affairs between the State and the pharmaceutists in consonance with the present scientific and social status of the apothecaries? and is this intervention for the advantage of the State, the community, or of pharmacy?

4. What should be done to effect the greatest possible uniformity in strength and composition of remedies used in all countries?—a continuation of the universal codex question.

5. What are the best methods of assaying the organic alkaloids in drugs?

We have not yet been informed of the appointment of any delegates from American Institutions. This has arisen from the fact that the Austrian Committee did not issue a letter circular, and their Journal notice was overlooked. There may be several pharmaceutists in Europe who might be inclined to attend if delegated in time, or possibly some may contemplate a visit. There is yet time: among the many able German pharmaceutists domiciled here, are there not some who may wish to visit the "Fatherland," and say a good word for the liberty of pharmacy under the diploma?

Massachusetts College of Pharmacy.—The first annual commencement of this flourishing institution was held on the evening of May 19th, 1869, at No. 12 Temple place, Boston. Addresses were delivered by Samuel M. Colcord, Chairman of the Board of Trustees, and others. The President of the College, Thomas Hollis, Esq., conferred the degree of Graduate in Pharmacy on ten gentlemen, as follows:

Joseph Taylor Brown, Jr.—The substitution of Chicory for Dandelion.

Judson Rollin Cheney—Syrup of Lactucarium.

Thomas Doliber—Assays of twelve specimens of Powdered Cinchona Bark.

Charles Benjamin Reed Hazeltine—Rheum Rhaponticum.

William Ellis Jenkins—Unguentum Hydrargyri.

Henry Ware Lincoln—Pill Making.

John Colby Lowd—Pulverization of Camphor.

George Frederick Holmes Markoe—The substitution of Glycerin for Sugar in some officinal Fluid Extracts.

Charles Augustus Tufts—Mineralogy and its connection with Pharmacy.

Abijah Baker Warfield—Syrupus Ferri Iodidi U. S. P.

Several theses were read by members of the Graduating Class, and the Valedictory was delivered by Prof. Cyrus M. Tracy. We congratulate our New England confreres on the successful initiation of their school of pharmacy, and wish them continued advancement from so good a beginning.

Association of Medical Journalists.—At the late meeting of the American Medical Association, in New Orleans, advantage was taken of the presence of many members of the medical press to form "The Association of American Medical Editors." The objects appear to be the culture of friendly relations, unity of effort as regards urging medical education, the collection of vital statistics, and a system of registration, and especially to promote the reception of foreign exchanges. Dr. N. S. Davis, of Chicago, was elected *President*, Dr. Wm. M. McPheeters, *Vice President*, Dr. W. S. Mitchell, *Permanent Secretary*, and Dr. J. B. Lindsley, *Secretary*. We are indebted to Dr. Mitchell for a copy of the proceedings of the organization meeting, and a note soliciting our co-operation, probably under a mistake as to our connection with the medical profession. As the objects of the association lie mainly outside of our own, and as our foreign exchanges are chiefly effected on a money basis, we do not see any course but to politely decline the invitation.

National Pharmacopœia Convention of 1870.—Dr. Wood has issued the following circular to the incorporated medical and pharmaceutical bodies of the United States, viz.:

National Convention for the Revision of the United States Pharmacopœia.

At the meeting of the Convention, held in May, 1860, the following resolutions were adopted:

"1. The President of this Convention shall, on the first day of May, 1869, issue a notice, requesting the several incorporated State Medical Societies, the incorporated Medical Colleges, the incorporated Colleges of Physicians and Surgeons, and the incorporated Colleges of Pharmacy throughout the United States, to elect a number of delegates not exceeding three, to attend a general convention to be held at Washington on the first Wednesday in May, 1870.

"2. The several incorporated bodies, thus addressed, shall also be requested by the President to submit the Pharmacopœia to a careful revision, and to transmit the result of their labors, through their delegates or through any other channel, to the next convention.

"3. The several medical and pharmaceutical bodies shall be further requested to transmit to the President of this Convention the names and residences of their respective delegates, as soon as they shall have been appointed, a list of whom shall be published, under his authority, for the information of the medical public, in the newspapers and medical journals in the month of March, 1870."

In compliance with the above resolutions, the President of the Convention announces that a meeting will be held at Washington, D. C., on

the first Wednesday in May, 1870, and requests that the several incorporated bodies shall, after a revision of the U. S. Pharmacopœia, send the results of their labors to the Convention, and further requests that they transmit to the President the names and residences of their several delegates, so soon as elected, that the list may be published.

GEORGE B. WOOD, M. D.
President of the Convention of 1860.

It will be observed that each body addressed is invited to revise the pharmacopœia and submit the result to the Convention through the delegates they send. It is not expected that every body will have the time or energy to go into all the minutiæ of a revisory committee acting for publication, but every College of Pharmacy at least should produce an interleaved pharmacopœia embracing such suggestions of new formulas and criticisms of old ones as they may deem important. In this way the deliberately expressed views of physicians and pharmaceutists of all sections of the country would be placed before the committee of revision and publication, and will have their due weight.

MEETING OF THE AMERICAN MEDICAL ASSOCIATION.—Convened at New Orleans on the 4th of May last and adjourned on Friday the 7th. The meeting was well attended, several hundred members being present. Dr. G. Mendenhall of Ohio was elected President, and Drs. Stone of Louisiana, Sayre of N. York, F. Gurney Smith of Penna. and Moore of Missouri, were the Vice-Presidents. Dr. J. B. Atkinson of Philada., Permanent Secretary. The most important labors of the meeting, outside of its regular programme, were in reference to medical education, nomenclature of diseases, and to the action of the State Societies in carrying out ethical rules and in upholding the standard of education among new members of the profession, by exacting an additional examination by a State board.

Dr. Herrick of Louisiana offered the following additional Section to Article I, of the Code of Ethics:

"Section V. The spirit of trade and of gain from merchandise should by all means be dissociated from the practice of a liberal profession, and it is important that practitioners should not allow their pecuniary interests to compromise their duties to their patients. Therefore, in cities and other communities, were the services of competent apothecaries can conveniently be obtained, physicians should resign to them the whole business and profits of dispensing medicines."

The resolution lays over for action at the next annual meeting at Washington.

THE NEW YORK "APOTHECARIES ACT."—According to the N. Y. Medical Gazette of May 8th, the following is a copy of an Act passed by the Legislature of New York, and then awaiting the Governor's signature:

"Section 1. No person employed or in attendance at any drug store or apothecaries shop shall prepare a medical prescription unless he has served two years apprenticeship in a drug store, or is a graduate of a Medical College or a College of Pharmacy, except under the direct supervision of some person possessing some one of the before-mentioned qualifications; nor shall any one having permanent charge as proprietor, or otherwise, in any store in which drugs are sold by retail, or at which medical prescriptions are put up for sale or use, permit the putting up or preparation thereof therein by any person, unless such person has served two years as an apprentice in a retail drug store, or is a graduate of a Medical College or a College of Pharmacy.

"Section 2 Any person violating the provisions of this act shall be deemed guilty of a misdemeanor, and shall be punished by a fine not exceeding $100, or by imprisonment not exceeding six months in the county jail; and in case of death ensuing from such violations the person offending shall be deemed guilty of a felony, and punished by a fine of not less than $1000, nor more than $5000, or by imprisonment in the State prison for a term of not less than two years or more than four years, or by both fine and imprisonment, in the discretion of the court.

"Section 3. This Act shall take effect immediately."

The object of the Act is evidently to prevent incompetent persons from dispensing physicians prescriptions, and so far as it accomplishes that important purpose it is praiseworthy; but will it be effective? Firstly, we would query whether it is aimed at the offending junior, who has not been two years at the pestle, or is it directed to the proprietor? If the junior's act causes death, does he or the employer suffer fine and imprisonment? We presume it is for the latter as the responsible party, and yet it might become a question, and should be distinctly stated. So far as we can see, this law takes no cognizance of mistakes and death caused by proprietors and graduates in pharmacy. The worst feature of the bill is that a medical diploma gives authority to practice pharmacy. It is quite usual to laud the manner in which pharmacy is practiced in Germany, France and other continental countries of Europe, yet in those countries physicians are not permitted to practice pharmacy except in the rural districts, and then not within three miles of the nearest apothecary. Is this because the medical education of Europe is inferior to ours? No, it is because the authorities find it safer and to the advantage of the community to separate the prescriber and the dispenser, one being a check on the other. So it should be here. Evidence of a proper qualification should be exacted of all who practice pharmacy, and then regulate the cases of malpractice by the Common Law. This New York law, however, bears only on persons whose period of service has not reached two years; all others, medical doctors included, go scott free so far as this particular law is concerned.

When our Legislature passes a law we trust it will be more comprehensive and effective than this New York law.

THE PHARMACIST.—From an editorial note in the June number we learn that the Publishing Commitee of the Chicago College of Pharmacy, having that journal in charge, have determined, encouraged by the success of the first volume, to continue the work as a monthly journal. We presume the size of the number will remain the same. From the statements made there seems to be a strong effort made to sustain the subscription list, which makes the enterprize pay handsomely. The pages speak for themselves, and show an earnestness of purpose highly creditable to Chicago Pharmacy.

THE MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION to be held at Chicago on the 7th, 8th and 9th of September next, promises to be one of the largest and most interesting gatherings of that body. The Chicago pharmaceutists have entered heartily into the matter, especially in reference to the exhibition of specimens, preparations, apparatus, etc., to be coincident with the meeting. A circular received some time ago, and which we intended to notice in this number, has been lost or mislaid, so as to to prevent our action in that direction. The importance of early action on the part of exhibitors should be well understood. Articles intended for exhibition should be sent, free of charge, to Henry W. Fuller, (Local Secretary) care of Fuller, Finch & Fuller, 24 Market St., Chicago, on or before Sept. 1st, with a list and description of the articles sent. The committee desire to have drugs largely illustrated as possible; then pharmaceutical products, apparatus, glassware, books relating to pharmacy and miscellaneous articles.

THE SANDFORD TESTIMONIAL.—The President of the Pharmaceutical Society of Great Britain, George Webb Sandford, has won for himself golden opinions by his indefatigable labors on behalf of the legislation for pharmacy in England, which resulted in the passage of the pharmacy act last year. So universal seems to have been the impression of the earnest and disinterested character of his efforts, that the idea of a testimonial from members of the Society in England and Scotland seems to have been very popular, and a fund of more than 500 pounds sterling subscribed. This sum was expended in a service of plate valued at $1000, and the balance devoted to a portrait of Mr. Sandford, by an eminent artist. On the 19th of May a meeting was held at the Society's Hall, at which the presentation was duly made and accepted, followed in the evening by a complimentary dinner at the Free Mason's Tavern, a place in London noted for such reunions. Various speeches were made after dinner apposite to the occasion by Mr. Sandford and Messrs. Evans, Dr. Silver, Mr. Randall, Mr. Deane, Joseph Ince, Dr. Redwood and others. All passed off pleasantly.

MARYLAND COLLEGE OF PHARMACY DELEGATES.—*Baltimore, June 19th*, 1869.—Editor American Journal Pharmacy—*Sir:* At a meeting of Maryland College of Pharmacy, held on Thursday, June 10th, the following persons were elected delegates to the American Pharmaceutical Association which meets in Chicago, September 7th, 1869.

GEO. W. ANDREWS,
J. F. MOORE,
J. F. HANCOCK,
E. N. RUSSELL,
N. H. JENNINGS.

J. J. SMITH, *Secretary*,
Md. College Pharmacy,

THE DRUG LAW.—The joint committees of the County Medical Society, the College of Physicians and the College of Pharmacy, of this city, have not as yet determined on any course of action regarding the passage of a law against the adulteration of drugs and the regulation of the practice of pharmacy. It is to be hoped that the committee of the Pharmaceutical Association having the matter in charge will report a wise and salutary law that will reach the evils proposed to be remedied. The best light we can get at, individually, disposes us to believe that the subject of adulterations will be best approached by a separate law, whilst the practice of pharmacy, including the sale of poisons, should be made the subject of a special act. If a State law cannot be had, as is said to be true, then have it applicable to Philadelphia, and prospectively to make it requisite for every practitioner to have a certificate of qualification. As to the law against adulterations provision must be made for substantiating accusation by chemical analysis and other positive evidences, else the law will be tyranical and unjustly administered, or it will be a dead letter.

PHARMACY IN ITALY.—We learn through the *Journal de Pharmacie* that the Minister of the Interior of Italy, in his official report, states the number of pharmaceutical shops in that kingdom to be 10,005, which is equivalent to one for every 2426 inhabitants. The papal dominion, embracing 800,000 inhabitants, has 302 shops, making 10,307 for all Italy.

METRICAL WEIGHT IN ENGLAND.—At the meeting of the Pharmaceutical Society, held April 7th, Prof. Redwood brought forward the subject of metrical weights for pharmacy as a subject for discussion, and introduced it with explanatory remarks evidently favoring their ultimate adoption; but forseeing the numerous troubles in practice that would arise during the transition period required to get the public accustomed to the new quantities, he proposes, as a temporary compromise, to bend the avoirdupois to the decimal, so as to make a new weight of 61·7 grains, which

is 4 grams, and call it a *tetram*; then a weight representing 8 tetrams to be called an *octram*, = 493·8 grs. to represent an ounce and a third, equivalent to 16 octrams to be called a *libram* or pound, = 7900 grains. In this way it is presumed that a compromise could be effected, and new quantities adopted for old names, for practically that would be the effect. It would be drams, ounces and pounds, with a new value, and not tetrams, octrams and librams. If a measure of this kind should be finally decided on, it appears to us that it would be better to take the half kilo for a pound = 7717 grains, then, provisionally, divide this into sixteen ounces of 482·3 grs., which is very near the troy ounce, with which we are familiar in pharmacy. This, unfortunately, would do but little towards acquainting us with metrical weights, except the half-kilo, as the decimal character would be completely lost in the duodecimal and octaval division, thus:

		Troy.		New.	Troy.	
1000 grams	kilogram.	= 15434	gr., =	2 lbs.	32 oz.	15360 grs.
500 "	demi kilo.	= 7717	" =	1 "	16 oz.	7680 "
250 "	quarter kilo.	= 3858·5	" =	½ "	8 oz.	3840 "
125 "	eighth kilo.	= 1929·25	" =	¼ "	4 oz.	1920 "
62·5 "	sixteenth kilo.	= 964·625	" =	2 oz.	2 oz.	960 "
31·25 "	32d of kilo.	= 482·3125	" =	1 "	1 oz.	480 "

Now in France the commercial retail practice has resorted to this very plan of halfing and quartering, the half kilo, taking the place of the old poid du marc, and in the formulæ in Guibourt's pharmacy one can see the same carried out in pharmacy. If, then, we determine to introduce the metrical system into the Pharmacopœia here with a compromise, let some such provisional division as that above stated be adopted until, as in money, we can school ourselves to decimal division. There are many who can recollect but a few years back, when the octaval division of the dollar was in almost exclusive use, and it was not until the value of the Spanish 12½ cent piece was reduced by public opinion to 10 cents that they disappeared. Should the metrical system be introduced, the same practical adherence to the old system would follow, until time and self-interest could operate to degrade and reject the old weight.

GERMAN JOURNALS.—Being now in the regular receipt of several German Chemical and Pharmaceutical Journals, we have entered into a business arrangement with Prof. John M. Maisch, by which each number of this Journal will contain a regular contribution of translations from that source. We hope thus to give our readers earlier information of observations and discoveries made beyond the Rhine and the Alps than we have heretofore derived through the French and English journals.

ERRATA.—At page 222, second line from the bottom, read "course" in place of "coarse," as printed.

At page 226, fifth line from the bottom, read "fluidrachms" instead of "fluidounces," as printed.

On Colophonine and Colophonic hydrate.—New substances procured from the products of the destructive distillation of resin by Charles R. C. Tichborne, M.R.I.A.F.C.S., etc.

Received from the author by post.

Manufacturer and builder, Vol. 1, No 6, June, 1869. Western & Co., 37 Park Row, New York; pp. 32, quarto—monthly.

Two numbers of this well illustrated and printed journal have reached us, which speak well for it as an exponent of its department. It is full of interesting articles, several of which are handsomely illustrated. Its price, $1.50 per annum, indicates a large circulation.

Report of the Board of Managers of the Pennsylvania Hospital, to the Contributors at their Annual Meeting, held Fifth month 3d, 1869. Together with the accounts of the Treasurer and Stewards; pp. 34, octavo

This report gives an exhibit of the far-reaching usefulness of this most valuable institution. The surgical department, according to the report of the medical corps, has, notwithstanding the absence of any extensive catastrophes, had a full number of cases of accidents, arising largely from the numerous manufacturing establishments which are in and near this city. As these cases are all treated gratuitously if brought within 24 hours of the accident, they are a heavy draft on the resources of the Hospital. Of 1948 patients admitted, 869 were natives, the others of foreign birth.

Proceedings of the State Medical Society of Michigan for the year 1867 and 1868. Detroit, 1869; pp. 116.

In the report on new remedies in this Annual by Dr. S. P. Duffield, he says:

"We have in the mineral kingdom a new element discovered called Thallium, which has the property of entering the circulation and producing the most offensive odor to the perspiration of the parties taking it. Dr. Bunsen was compelled to absent himself from society for four weeks on this account. This one property will kill it for all practical use in medicine. Its action is similar to zinc and iron on the economy, acting as a tonic and producing in large doses severe headaches."

Brande and Taylor, American edition 1867, page 346, says:

"Experiment has shown that the salts have a poisonous action on animals. They produce griping pains, with trembling of the limbs and a state of paralysis. Less than two grains has sufficed to kill a dog, &c."

Nothing is said about its quality of affecting the perspiration, nor do we recollect having noticed any quality of this kind attributed to the salts of thallium; nor of researches on thallium by Bunsen. Has not Dr.

Duffield confounded tellurium with thallium? it is well known that that element acts in the way suggested.

Anniversary Oration delivered before the Medical Society of the District of Columbia, September 26, 1866, by J. M. Toner, M. D. Printed by request of the Society, Washington, D. C., 1869; pp. 80 octavo.

This is a valuable contribution to the local medical history of the District of Columbia, embracing many facts bearing on its early physicians, the origin of its medical schools, societies and hospitals, and especially in regard to the hospital system arising out of the late war, and the *Army Medical Museum*. Much that is in it will prove useful to the future medical historian. Allusion is made to the several pharmacopœia conventions since 1820, but we have not been able to find any allusion to the Pharmaceutical Association of the District, or to the meeting of the Amer. Pharmaceutical Association at Washington in 1858. Though not strictly medical institutions, they might well have received a passing notice, in an address embracing so many topics, without detracting from its merits as a contribution to the medical history of the Capital.

Quarterly Summary of the transactions of the College of Physicians of Philadelphia, from Dec. 5, 1866, to Dec. 2, 1868, inclusive; pp. 48, octavo.

This is a small contribution (23 pages) from so eminent a body, as the result of two years "transactions," more than half of its pages being devoted to memoirs of its late members, Dr. T. E. Beasley and Dr. Francis West, prepared at the request of the College, by Dr. E. Littell. These memoirs are carefully prepared and present truthful portraitures of the subjects, which will be recognized by those who knew them as physicians and citizens of Philadelphia.

American Medical Biography. Dr. Joseph M. Toner, of Washington, D. C., has issued a circular to the medical profession requesting information of deceased American physicians, with a view to the preparation of a Biographical Dictionary, which is intended to embrace a notice of every deceased practitioner of regular medicine from the earliest history of this country. All who have information of a reliable character should send in their contributions to this laudible enterprise.

Produits Végéteaux du Portugal Considérés au point de vue de l'alimentation et de Matérie Médicale, par J. L. Soubeiran et Aug. Delondre. (Extracted from the Bulletin of the Imperial Acclimatation Society, for 1867). Paris, 1867, pp. 26.

La Matière Médicale a l'exposition de 1867, par J. Léon Soubeiran et Augustin Delondre. (Extrait de Journal de Pharmacie). Paris, 1868, pp. 39.

De l'introduction et de l'acclimatation des Cinchonas dans les Indes Neer-

landaises, et dans les Indes Brittaniques, par J. L. Soubeiran et Aug. Delondre. Paris, 1868, pp. 165.

The above works have been received from the authors, and possess many points of interest, especially the latter, which is a pretty full resumé of the whole subject of the transplanting of the cinchona. Received too late for notice in this number, we hope te refer to them again. The authors are among the most promising of the younger pharmaciens of Paris, and are industrious. A recent letter from M. Delondre, querying for information relative to opium culture in the United States, informs us that M. Soubeiran and himself have engaged in a very elaborate study of opium, especially in relation to its chemical history from the period when, in a succulent state, it circulates in the proper vessels of the plant, to its entry into commerce, involving nice questions in vegetable physiology, and the part taken by atmospheric oxygen in the modification of poppy juice.

OBITUARY.

Dr. Robley Dunglison died in Philadelphia on the 1st of April last, at the age of 71 years, having been born at Keswick, in Cumberland, England, in 1798. He graduated in medicine at London in 1819, and came to the United States in 1824, it is said by invitation of Ex-President Jefferson, to take part in the establishment of the University of Virginia, at Charlottesville. In 1833, he accepted a Chair in the University of Maryland, and in 1836 again transferred his services to the Jefferson Medical College, in Philadelphia, then just reorganized, and occupied the Chair of Institutes of Medicine for thirty-two years, until a few months before his death, contributing largely to the extraordinary success of that College, of the Faculty of which he was Dean. Dr. Dunglison's powers as a lecturer were remarkable, illustrated by a ready memory and extensive erudition. His reputation as a medical writer has long been very prominent, and his writings, judged by their continued publication, are among the most successful from the American medical press. Those most familiar to us are his "Medical Lexicon," and his "New Remedies," the latter intended to embrace therapeutic novelties as they became known in the journals, the former a vast gathering together of the facts and definitions of the medical sciences in alphabetical order. Perhaps few persons have been better qualified for such a work, as he united extensive reading and a good memory with indomitable perseverance. Dr. Dunglison will take his stand as an author more as a compiler than as a discoverer, and did far more to notice and bring forward the observations of others, than to originate new facts based on an experimental study of his profession, having never sought an active practice, the true field in which medical facts and theories should be tested.

At the meeting of the College of Physicians of Philadelphia, on May 5th, the following, among other resolutions, were passed:

"*Resolved*, That in the death of Dr. Dunglison the American medical profession has lost one of its highest ornaments, the professional corps one of its most distinguished members, physiological science one of its most able expounders, and medical literature one of its most useful, erudite and abundant authors."

Prof. J. Nickles, of the faculty of sciences at Nancy, died early in April, from the irritating effects of Fluorine or one of its compounds, in the investigation of which he was engaged. Prof. Nickles was suffering from a severe cold at the time, which was greatly aggravated by the fluoric compound. He was the foreign collaborator of the "Journal de Pharmacie," and the scientific correspondent of the American Journal of Science and the Arts. The Editors of the *Journal de Pharmacie* promise a more detailed notice.

Louis Felix Joseph Garot, pharmacien of Paris, was born on the 8th of March, 1798, and died on the 7th of May, 1869, at Versailles, to which city he had retired after practising pharmacy for 45 years. He was a pupil of the elder Robiquet, and afterwards served in the hospitals and the Pharmacie Central, the friend of Guibourt, Soubeiran, Girardin and others, who, with himself, were an honor to their profession. Various of his papers are interspersed in the volumes of the *Journal de Pharmacie*. In 1847 he lost a son of great promise, and about the same time M. Dorvault married his daughter.

M. Cap, from whose notice we extract these lines, says Garot was the type of a well informed, conscientious and disinterested pharmaceutist. Charged on several occasions with different sanitary and benevolent labors in the public service, he has always acquitted himself with devotedness and intelligence; but it was the amenity of his disposition and his equible temper and goodness of heart that won for him the general affection of his friends.

Dr. Charles D. Meigs, of Philadelphia, formerly Professor of Obstetrics, in Jefferson Medical College, died at his residence at Media, near this city, where he had retired some years ago, on the 20th inst., in the 78th year of his age. Dr. Meigs was a native of Georgia, having transferred his residence to Philadelphia in early life. Among the most noted practitioners in his branch, he was elected to the Jefferson School, where during a long series of years he lectured to a large class of students. Dr. Meigs was noted for his scholarship, and was the author of several medical works. As a lecturer he was fluent and eloquent, but erratic and unsystematic, yet always popular with his class. As a practitioner he enjoyed an undiminished reputation, and as a citizen was widely known and respected.